



Rapport for deltagelse i

The XII World Congress on Computers in Agriculture,
University of Costa Rica, San Jose, Costa Rica, 27 – 30 juli, 2014

Baggrund

Konferencer i serien World Congress on Computers in Agriculture (WCCA) bidrager til at styrke samarbejde og vidensdeling mellem nationale og internationale organisationer og foreninger med interesse for forskning og udnyttelse af informationsteknologi i jordbrug, fødevarer og miljø.

WCCA konferencer organiseres af International Network for Information Technology in Agriculture (INFITA) i samarbejde med nationale medlemmer af INFITA. Fra dansk side er medlemskabet via European Federation for Information Technology in Agriculture (EFITA), hvor Dansk Selskab for Informatik i Jordbruget (DSIJ) er medlem.

Konferencen i Costa Rica blev arrangeret i samarbejde Universidad de Costa Rica og fandt sted på campus. Fagligt lagde arrangørerne op til en bred dækkende conference, idet de opfordrede til at fremsende indlæg indenfor disse områder:

- Adoption and Extension,
- Decision support Systems,
- Education/Training,
- Distance Learning and Professional Accreditation,
- e-AgBusiness and Production Chain Management,
- Field Data Acquisition and Recording,
- Food Safety Control/Tracking-Tracing, GIS,
- Grid Applications, Information Systems and Databases,
- Instrumentation and Control,
- Web Services, Portals and Internet Applications,
- Library Science and Knowledge Representation,
- Modeling and Simulation,
- Packaging Science and Technology,
- Portable and Nomadic Computing,
- Precision Agriculture,
- Rural and Environmental Development and Policy,
- Wireless and Sensor Networks

Fra Videncentret blev der fremsendt tre proposals:

- FarmTracking® - alerts and Tracking in a Farming Context
- ICT and social media as drivers of multi-actor innovation in agriculture

- Mark Online, a full scale GIS-based Danish national farm management information system der alle blev accepteret til oral præsentation. Abstracts for disse indlæg er vist herunder.

FarmTracking® - alerts and Tracking in a Farming Context

Nicolai fog Hansen, Jens Peter Hansen and Jens Bligaard

Cand. Agro oecon.

Denmark

FarmTracking® aims to provide the farmer with a unique opportunity for receiving practiceaimed information and decision support delivered at the right place at the right time. FarmTracking is a concept and a system that utilizes the capabilities of the smartphone in combination with central databases and GIS based to provide the farmer with context specific notifications and alerts. A generic framework able to fulfill a number of requirements has been developed, and this framework has shown its value through working prototypes for handling logbook for manure storage tanks and for retrieving field specific information.

ICT and social media as drivers of multi-actor innovation in agriculture

Jens Peter Hansen, Lizzie Melby Jespersen, Gianluca Brunori, Allan Leck Jensen, Kirsten Holst, Camilla Mathiesen, Niels Halberg and Ilse Ankjær Rasmussen.

¹Knowledge Centre for Agriculture, Aarhus, DK; ²International Centre for Research in Organic Food Systems (ICROFS), DK; ³Dipartimento di Scienze Agrarie, Alimentari e Agroambientali

(DISAAA), Pisa, IT; ⁴Department of Engineering, Aarhus University, DK;

⁵Danish Centre for Food and Agriculture (DCA), Aarhus University, DK.

Innovation occurs as a result of the creativity and interplay between actors combining new and/or existing (tacit) knowledge. As input to a report on agricultural knowledge and innovation systems (EU SCAR, 2013), we analyzed the use of social media and other information and communication technologies (ICT) tools as drivers of innovation in agriculture and other sectors.

We found, that there is a great potential for using existing social software tools and platforms for communication, interaction, knowledge sharing, preservation of information and as such stimulate multi-actor innovation. Apart from a few exceptions, our review of social software systems revealed that agriculture as a sector to some extent has adopted the general social software programs as tools for networking and knowledge sharing, but the potential to use it for crowdsourcing and cooperation or as a supplement to face-to-face interactions has not yet been exploited.

Mark Online, a full scale GIS-based Danish national farm management information system

Jens Bligaard
Knowledge Centre for Agriculture
Denmark

With its oceanic climate with moderate summers and mild winters in combination with a highly organized infrastructure, farming has traditionally been very intensive in Denmark. The cultivated land constitutes 26,000 km² out of a total of 43,000 km². Most of the arable land is used for intensive plant production with a high level of mechanization and management practices. For more than three decades The Knowledge Centre for Agriculture (KCA) has developed and implemented ICT Farm Management Information Systems (FMIS) for planning and documentation of all aspects of crop production. Today, updated field specific information on field size, soil type, crops, varieties, soil tillage, sowing, fertilization, pesticide usage etc. is now hosted in the GIS-based FMIS, Mark Online covering more than 80% of the arable land. A centralized Microsoft SQL data base forms the core base for all the information. Based on a MS.NET framework a number of multi-tier client-server applications have been developed. Most of the desk top applications consist of relative thick clients based on Win forms, whereas HTML5 apps and Android/iOS native apps are used for the mobile platform. Data exchange between the clients and server are based on a web service layer using data compression to improve performance. Farmers are one of the two primary target groups. Local agricultural advisors working on behalf of farmers not having their own software is the other primary target group. Nonetheless, both groups are mainly focusing on field record planning, decision making and documentation. Data is transferred between the Mark Online system and the authorities by XML-based web services or ordinary file upload to official websites. The Open Geospatial Consortium's Web Feature Service (WFS) provides another interface allowing requests for geospatial features, which is used between Mark Online and external GIS.

Formål

Formålet med deltagelse i konferencen var via præsentationer af Videncentrets arbejde med kontekst styrede registreringer og beslutningsstøtte, udnyttelse af data på landbrugsbedriften og videnformidling og dialog via nye kanaler at

- få vurderet og kritiseret vort arbejde,
- opnå synlighed på den internationale scene i forhold til tilsvarende udviklingsaktiviteter,
- etablere personlige relationer til potentielle ressource personer

samt at få et generelt overblik over aktuelle væsentlige områder indenfor forskning og udvikling i brug af IT teknologi i landbruget.

Rejseplan

Rejseplanen for Jens Peter Hansen er vist herunder. Desuden deltog Jens Bligaard også i konferencen.

Udrejse lørdag 26. juli 6:25 fra Aalborg
Ankomst San José, Costa Rica søndag 11:45

Konference mandag 28. juli – onsdag 30. juli
Technical Field Tour torsdag 31. juli.

Rundtur i Guanacaste provinsen fredag 1. august – mandag 3. august (Ferie)

Hjemrejse tirsdag 5. august 7:00 fra San José

Hjemkomst Aalborg onsdag 11:05

Indhold

Som bilag til dette dokument er vedhæftet Complete Program Final med markering af de mest givende sessioner, som Jens Peter Hansen deltog i. Noter taget on-site fra disse sessioner er vist herunder.

Transparency in Food Networks: Case Studies on challenges, opportunities and system development

Gerhard Schiefer, University of Bonn, Germany

Gerhard snakker om teknologi, viden og people. En aha oplevelse mht people for ham selv efter conference i Africa.

Plenary Session - Expert Panel Discussion. Reducing Risk and Improving Sustainability: The role of IT in agriculture and natural resources

Moderator: José Francisco Aguilar, University of Costa Rica

Stanley Best: Snak data sharing standards frem for data standards. Nævner crowdsourcing om at samle og dele data (om biodiversitet) - et site hvor brugere kan uploade billeder etc som videnskabsfolk kan kigge på.

AgroFE – Collaborative Environment and Building Learning Knowledge Base for Agro-Forestry Trainings

*Miklós Herdon, Charles Burriel, János Tamás, László Várallyai, Péter Lengyel and János Pancsira
University of Debrecen, Hungary*

Drejede sig primært om fordele ved brug af open source platformen Moodle – se <https://moodle.org/>

10 steps to an integrated ICT concept for the management of countries

Walter H. Mayer, CEO, PROGIS GmbH, Austria

Væsentlige trin – hvor vi halter bagud i Danmark - omfatter (2) Ortho images og sensorer og (3) LPIS top down og bottom up – husk at inkludere stakeholders: Business-models have to be set up integrating stakeholders allowing IT-supported cooperation. For all partners the benefits must be identified and valued to understand the financial commitments.

A Future Internet Collaboration Platform for Safe and Safe and Healthy Food from Farm to Fork.

Sjaak Wolfert, Wageningen University and Research Center, The Netherlands

myFI-Space regner med at udvikle 150 apps til B2B – mon det lykkes at nå dette antal? Deres arbejde med apps vil alene tage hånd om de grundlæggende strukturer - lidt i stil med FarmTracking. Herunder udvalgte slides fra præsentation.

A BYOD Strategy for a Public University.

Fedro S. Zazueta, University of Florida, USA

Nødvendig med strategi for BYOD - det er hvad de studerende bruger og det er her de skal mødes. Læg infrastruktur ud til leverandører – ikke en opgave for et universitet. Alt skal kunne tilgås overalt og fra enhver device. Der henvises til Jens Peter Hansen's indlæg, hvor det blev understreget, at Contest is king

Extension The Next 100 Years: Using Emerging Communication Technologies to deliver International Extension Programs.

Pete Vergot III, Scott Jackson and Heather Kent University of Florida, USA

Den primære kilde til info er andre landmænd. Landmænd foretrækker at snakke med landmænd. Måske kan social media bruges. Nævner også, at der er for få rådgivere. De er spredt for tyndt ud 1: 800 så face to face er ikke realistisk. Desto større landbrug desto mere køb af rådgivning.

Plenary Session- Round Table. It Innovation.

Moderator: Fedro Zazueta

Fedro Zazueta: IT innovation:- 125 års erfaring 125 års blokeringer. Nævner Nexus of Forces (Forrester). Gør opmærksom på, at vi styrer efter bakspejlet og derfor ikke er klar på disruptive teknologier.

Gerhard Schiefer: Det skal være simpel vi skal ikke træne brugerne vi har ikke nok kontakt med brugerne. Need for cooperation og exchange - ellers kan vi ikke forvente at lave noget der når landmænd. Open innovation som den nye måde at gøre ting på. Savner mere samarbejde mellem forskellige stakeholders - get them together - get them in these meetings.



Figur 1 Deltagere i plenary session Fedro Zazueta, Seishi Ninomiya, Gerhard Schiefer, Walther Mayer og Peter Vergot III

Big Data and ICT in Agriculture

Seishi Ninomiya

University of Tokyo, Japan

What we need for data-centric science in agriculture

Big Data and ICT in Agriculture - Seishi Ninomiya

- Utilization of legacy data
 - Yield data, variety data, quality data, soil data, market data,
 - Need to rescue such data
- Sensor innovation IOT
 - To efficiently monitor the facts in fields, market, demands, logistics, processing,....
 - To collect knowledge of farmers, tacit knowledge
- Data integration and efficient usage
 - Common platform for seamless data exchange with standard
 - Agricultural cloud and database
- Tools to analyze
 - Statistics, data-mining, knowledge extraction, risk managements
 - Big data-based optimization
 - Enrichment of commonly usable APIs
- Communication innovation
 - Efficient Knowledge transfer to farmers
- Service science

Videncentrets præsentationer kan ses via disse links:

[ICT and social media as drivers of multi-actor innovation in agriculture](#)

Paper presented at: World Conference on Computers in Agriculture and Natural Resources, University of Costa Rica, San Jose Costa Rica, July 27th-30th, 2014.

[FarmTracking - alerts and tracking in a farming context](#)

Paper presented at: World Conference on Computers in Agriculture and Natural Resources, University of Costa Rica, San Jose Costa Rica, July 27th-30th, 2014

Udbytte

- AgrolIT projektet vil nu anvende FI-Ware platformen. VFL fulgte som en del af promille projekt i 2013 FI-Ware initiativet og inspireret af Wolferts præsentation opfordrede VFL projektledelsen i AgrolIT til at benytte FI-Ware. Denne opfordring bliver nu fulgt.
- Brug af Moodle til e-læring i 2015 projekt.
- Vore indsatser er på linje med udmelding fra Sjak Wolfert, Wagening, der viste denne slide:

ICT becomes a key driver for innovation

- **Location-based** monitoring and service delivery through GPS
- **Internet of Things (IoT)** – everything/everyone gets connected, M2M communication leading to autonomously communicating devices and virtualization of objects and processes
- **Data explosion** (Big Data), linked open data and the potential of open innovation
- **Mobile, Cloud services and App stores** – the Internet is everywhere (smart phones, embedded networked devices, etc.) with new possibilities for service delivery, augmented reality, etc.
- **Social media** – more direct and instant interaction between stakeholders potentially leading to new market opportunities and channels, co-innovation, etc.

XII World Conference on Computers in Agriculture

and Natural Resources, WCCA 2014

Campus Rodrigo Facio, University of Costa Rica

San José, Costa Rica

July 27th – 30th, 2014

Welcome to Costa Rica!

WCCA2014 is a global collaborative effort by international organizations working on Information and Communication Technologies (ICT) applied to agriculture, natural resources and associated disciplines.

WCCA2014 provides a forum for related professionals to exchange knowledge on applications and developments in the use of ICT. Authors are invited to participate. Topics include new applications of well-established and understood technologies to innovative and entrepreneurial applications of emerging technologies, in addition to issues related to policy and knowledge dissemination. Contributions from various countries provide a broadened perspective over a wide variety of topics for all attending.

Best Regards,



José Francisco Aguilar
Conference Chair
Universidad de Costa Rica



Fedro S. Zazueta
Scientific Committee Chair
International Federation of IT in Agriculture
(INFITA)

Organizers:



Supported by:



Organizing Committee

CHAIR: José Francisco Aguilar Pereira, Universidad de Costa Rica, Costa Rica
Remigio Berruto, Chair WCCA 2013 Universidad de Torino, Italy
Fedro Zazueta, University of Florida, INFITA, USA
Seishi Ninomiya, University of Tokyo, INFITA, Japan
Gerhard Schiefer, University of Bonn, INFITA, Germany

Scientific Committee

CHAIR: Fedro Zazueta, University of Florida, INFITA, USA
Seishi Ninomiya, University of Tokyo, INFITA, Japan
Gerhard Schiefer, University of Bonn, INFITA, Germany
Pete Vergot, (AIAEE) Association of International Agricultural and Extension Education
Alejandra Rojas González, Universidad de Costa Rica, Costa Rica
José Eugenio Hernández, Universidad Nacional de Colombia, Colombia
Daniella Moura, UNICAMP, Brasil
Xin Jiannong, INFITA, Board/PanAFITA, USA
Herdon Miklós, President of the Hungarian Association of Agricultural Informatics, Hungary
Umezurike Linus Opara, DST/NRF, South African Chair in Postharvest Technology, South Africa
Marcelo Bosch, Coordinación de Observación y Promoción de Áreas Emergentes, Argentina
Da-Wen Sun, Commission Internationale du Genie Rural, Ireland
Leisa Armstrong, ASICTA, Australian Society of Information and Communication Technologies in Agriculture Inc., Australia
Sjaak Wolfert, Senior Scientist Information Management and ICT in Agri-Food, The Netherlands
Omar Ulloa, Asociación Latinoamericana y del Caribe de Ingeniería Agrícola, Chile
Shujun Li, CAAMS, Chinese Academy of Agricultural Mechanization Sciences, China
Allan Orozco, Universidad de Costa Rica, Bio-Informática, Costa Rica
Samuel García Silva, Universidad Autónoma de Chapingo, México

Advisory Board

Seishi Ninomiya, University of Tokyo, AFITA (Asian Federation for Information Technology in Agriculture)
Fedro Zazueta, University of Florida, CIGR (International Commission of Agricultural and Biosystem Engineering)
Guy Waksman, EFITA (European Federation for Information Technology in Agriculture, Food and the Environment)
Pete Vergot, AIAEE (Association of International Agricultural and Extension Education)
Wilson Esquivel Flores, ALIA (Asociación Latinoamericana de Ingeniería Agrícola)

Local Organizing Committee

Henning Jensen Pennington, President, University of Costa Rica

Roberto Salom Echeverría, Vice-President of Extension, University of Costa Rica

Conference Chair: José Francisco Aguilar Pereira, Universidad de Costa Rica

Luis Felipe Arauz Cavallini, College of Agricultural and Food Sciences, University of Costa Rica

Olman Quirós Madrigal, College of Agricultural and Food Sciences, University of Costa Rica

Marta Bustamante, College of Agricultural and Food Sciences, University of Costa Rica

Eldon Glen Caldwell, School of Industrial Engineering, University of Costa Rica

Víctor Jiménez García, College of Agricultural and Food Sciences, University of Costa Rica

Juan Roberto Chaves Mora, School of Agricultural Engineering, University of Costa Rica

Fernando Vásquez Solís, College of Agricultural and Food Sciences, University of Costa Rica

Ana Cristina Quirós Soto, College of Agricultural and Food Sciences, University of Costa Rica

Anayency Cerdas González, College of Agricultural and Food Sciences, University of Costa Rica

Cindy Valverde Mora, College of Agricultural and Food Sciences, University of Costa Rica

Flor Eugenia Solano Montenegro, CONVERGE S.A., Organization and Technical Secretariat

Program at Glance

There will be simultaneous translation for all sessions.

Sunday, July 27, 2014		
15:00-18:00	Registration Desk Open	
15:00-16:00	PanAFITA Meeting Business	
16:00-17:00	CIGR Section 7 Business Meeting	
Monday, July 28, 2014		
08:00-12:00	Registration Desk. <i>College of Agricultural and Food Sciences.</i>	
08:40-09:20	Opening Ceremony. <i>College of Agricultural and Food Sciences.</i>	
09:25-10:15	Keynote Address: Transparency in Food Networks: Case Studies on challenges, opportunities and system development	
10:20-10:40	Networking Break	
10:45-12:00	Expert Panel Discussion	
12:00-13:30	LUNCH.	
14:00-15:30	Adoption, Extension and Education 1	Data Acquisition and Automation
15:30-15:50	Networking Break	
16:00-17:30	Adoption, Extension and Education 2	Decision Support Systems
17:40-19:05	Geographic Information Systems	Workshop: Logistics Modelling
19:30-21:30	Welcome Reception	
Tuesday, July 29, 2014		
08:00-18:00	Reception Desk. <i>College of Agricultural and Food Sciences.</i>	
08:30-09:30	Plenary: A Future Internet Collaboration Platform for Safe and Healthy Food from Farm to Fork	
09:30 -9:55	Networking Break	
10:00-11:00	Plenary: Logistics and Modeling to Improve Sustainability and Competitiveness	
11:05-12:05	Plenary: Advances in Precision Agriculture	
12:05-13:30	Lunch	
14:00-15:25	Information Systems	Mobile Applications and Strategy
15:30-15:55	Networking Break	
16:00-17:25	Modeling and Simulation 1	Workshop: Modelling Nutrient Movement
17:30-18:55	IT Innovation Round Table	

WCCA 2014

Program at Glance

Wednesday July 30, 2014		
08:00-18:00	Reception Desk Open	
08:30-09:55	Water and Climate 1	Workshop: Developing Mobile Apps
10:00-10:25	Networking Break	
10:30-11:55	Water and Climate 2	Modeling and Simulation 2
12:00-13:30	Lunch	
14:00-15:00	Plenary: Big Data and ICT in Agriculture	
15:05-16:05	Plenary: Online Education-Teaching, Learning and Extension	
16:10-16:40	Networking Break	
16:45-17:25	Closing Ceremony	
17:25-18:00	Networking and Cocktail	
18:10	Departure of the Attendants of the Costarican Dinner	
19:00-22:00	Costarican Buffet Dinner and Show: Tierra Tica. Mirador Ram Luna (1).	

Thursday July 31, 2014	
7:00 - 17:30	Technical Field Tour: CORBANA, Pococí – Siquirres, Limón (2).

(1) (2) Attendance by registration only.

University of Costa Rica Main Campus



Geographic coordinates of
College of Agricultural
and Food Sciences:

- **Latitude:** 9°56'19.21"N
- **Longitude:** 84° 2'54.02"O

PROGRAM

Main Venue (MV): College of Agricultural and Food Sciences.

There will be simultaneous translation for all sessions.

Sunday, July 27, 2014.

15:00-18:00 - Registration Desk Open

Reception Desk (RD), College of Agricultural and Food Sciences

15:00-16:00 - PanAFITA Business Meeting

Auditorium 2 (A2), College of Agricultural and Food Sciences

16:00-17:00 - CIGR Section 7 Business Meeting

Auditorium 2 (A2), College of Agricultural and Food Sciences

Monday, July 28, 2014:

08:00-12:00 - Registration Desk Open

Reception Desk (RD), College of Agricultural and Food Sciences

08:40-10:15 - Opening Ceremony and Keynote Address

Auditorium 1 (A1), College of Agricultural and Food Sciences

08:40 – 9:20 - Opening Ceremony

Ruth De la Asunción Romero, Vice-President of Student Affairs, University of Costa Rica

Luis Felipe Arauz Cavallini, Minister of Agriculture and Livestock

Gisella Kopper Arguedas, Minister of Science and Technology

Fedro Zazueta, INFITA

José Francisco Aguilar Pereira, Conference Chair

09:25-10:15 - Keynote Address

Transparency in Food Networks: Case Studies on challenges, opportunities and system development

Gerhard Schiefer

University of Bonn, Germany

Chair: Ruth De la Asunción Romero, Vice-President of Student Affairs, University of Costa Rica

10:20-10:40 - Networking Break

Cafeteria Area (CA), College of Agricultural and Food Sciences

10:45-12:00 - Plenary Session - Expert Panel Discussion

Auditorium 1 (A1), College of Agricultural and Food Sciences

Reducing Risk and Improving Sustainability: The role of IT in agriculture and natural resources

Moderator: José Francisco Aguilar, University of Costa Rica

Panelists:

Remigio Berruto, University of Turin, Italy

Stanley Best, National Institute for Agricultural Research (INIA), Chile

Erick Mata Montero, Instituto Tecnológico de Costa Rica, Costa Rica

Sjaak Wolfert, Wageningen University and Research Center, The Netherlands

12:00-13:30 - Lunch

Cafeteria Area(CA), College of Agricultural and Food Sciences

14:00-15:30 - Concurrent Sessions

Adoption, Extension and Education 1

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Werner Rodríguez, University of Costa Rica

AgroFE – Collaborative Environment and Building Learning Knowledge Base for Agro-Forestry Trainings

*Miklós Herdon, Charles Burriel, János Tamás, László Várallyai, Péter Lengyel and János Pancsira
University of Debrecen, Hungary*

Extension The Next 100 Years: Using Emerging Communication Technologies to Deliver

International Extension Programs

Pete Vergot III, Scott Jackson and Heather Kent

University of Florida, USA

10 steps to an integrated ICT concept for the management of countries

Walter H. Mayer, CEO

PROGIS GmbH, Austria

Alliance of Agricultural Information Services - SIDALC

Manuel Hidalgo and Federico Sancho

Instituto Interamericano de Cooperación para la Agricultura, Costa Rica

Data Acquisition and Automation

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Chair: Eldon Caldwell, University of Costa Rica

Use of infrared sensors for early detection of bacterial wilt caused by *Ralstonia solanacearum* in tomato plants

*Rubén Calderón Cerdas, Luis Felipe Arauz, Oscar Castro Zúñiga and Javier Bonatti González
Universidad de Costa Rica, Costa Rica*

Automation of processes during production of commercial oil palm seeds

*Randall Chinchilla, Carlos Chinchilla, Héctor Albertazzi and Guillermo Brenes
ASD, Costa Rica*

Contactless sensor system for row navigation and automatic depth control for a sugar beet harvester using a 3D ToF camera

*Vadim Tsukor, Wolfram Strothmann, Witali Schwamm and Arno Ruckelshausen
University of Applied Sciences Osnabrück, Germany*

Weed mapping based on integrated remote sensing method

*Éva Lehoczky, János Tamás, Péter Riczu and Miklós Herdon
University of Debrecen, Hungary*

15:30-15:50 - Networking Break

Cafeteria Area (CA), College of Agricultural and Food Sciences

16:00-17:30 - Concurrent Sessions

Adoption, Extension and Education 2

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Carlos Henríquez, University of Costa Rica

Agri-D: Agricultural Knowledge Discovery

*Federico Sancho and Manuel Hidalgo
Instituto Interamericano de Cooperación para la Agricultura, Costa Rica*

Harnessing indigenous knowledge for sustainable forest management in Ghana

*Margaret Sraku-Lartey
CSIR-Forestry Research Institute of Ghana, Ghana*

ICT and social media as drivers of multi-actor innovation in agriculture

*Jens Peter Hansen, Lizzie Melby Jespersen, Allan Leck Jensen, Kirsten Holst, Camilla Mathiesen
and Niels Halberg*

International Centre for Research in Organic Food Systems, Denmark

New Agri-informatics MSc Curricula in the Hungarian Higher Education

*Miklós Herdon, Róbert Szilágyi and László Várallyai
University of Debrecen, Hungary*

Decision Support Systems

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Chair: Elzbieta Malinowski, University of Costa Rica

Considerations about application of machine learning to the prediction of sigatoka disease

Luis Alexander Calvo, Mauricio Guzmán and José Antonio Guzmán

Instituto Tecnológico de Costa Rica, Costa Rica

Cost-benefit analysis of drip irrigation in cotton production in Northwestern China

Til Feike, Thomas Lang, Yusuyunjiang Mamitimin and Reiner Doluschitz

University of Hohenheim, Germany

Bioeconomic analysis in Uruguayan cow-calf systems using a simulation model

Juan Manuel Soares de Lima

Instituto Nacional de Investigación Agropecuaria, Uruguay

Incorporating the Methane Emission Model into Taurus, the Least Cost Ration Formulation Software for Beef Cattle

Abbas Ahmadi, Ermias Kebreab and James W. Oltjen

University of California Davis, USA

17:40-19:05 - Concurrent Sessions

Geographic Information Systems

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Alejandra Rojas González, University of Costa Rica

Mark Online, a full scale GIS-based Danish national farm management information system

Jens Bligaard

Knowledge Centre for Agriculture, Denmark

The modelling of agroforestry site selection to develop green corridor

János Tamás, Bernadett Gálya, Éva Bozsik, Miklós Herdon, Charles Burriel and Hermann Heilmeier

University of Debrecen, Hungary

Coffee zone updating: contribution to the Agricultural Sector

Graciela Romero Martínez and José Antonio Guzmán

ICAFFE, Costa Rica

Development of an application (indites software) that allows to integrate spatial and temporal information of a vineyard for the development of the digital terroir

Stanley Best, Lorenzo Leon and Rodrigo Quintana

Chilean Agricultural Research Institute (INIA), Chile.

WORKSHOP: Logistics modelling: Use of discrete event simulation models to optimize logistic problems

Remigio Berruto and Patrizia Busato, University of Turin, Italy.

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Coordinator: Víctor Jiménez, University of Costa Rica

See details on [pages 17, 8, 19.](#)

19:10 21:00 Welcome Reception

Cafeteria Area (CA), College of Agricultural and Food Sciences

Tuesday, July 29, 2014.

8:00-19:00 - Registration Desk Open

Reception Desk (RD), College of Agricultural and Food Sciences

08:30-9:30 - Plenary Sessions

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Marta Bustamante, University of Costa Rica

A Future Internet Collaboration Platform for Safe and Safe and Healthy Food from Farm to Fork

Sjaak Wolfert

Wageningen University and Research Center, The Netherlands

09:30-9:55 - Networking Break

Cafeteria Area (CA), College of Agricultural and Food Sciences

10:00-11:00 - Plenary Session

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Werner Rodríguez, University of Costa Rica

Logistics and Modeling to Improve Sustainability and Competitiveness

Remigio Berruto

University of Turin, Italy

11:05-12:05 - Plenary Session

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Carlos Henríquez, University of Costa Rica

Advances in Precision Agriculture

Stanley S. Best

National Institute for Agricultural Research (INIA), Chile

12:05-13:30 - Lunch

Cafeteria Area (CA), College of Agricultural and Food Sciences

14:00-15:25 - Concurrent Sessions

Information Systems

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Rafael Salas, University of Costa Rica

Common KADS Model for Web Based Agricultural Decision Support Systems

Jignesh Patel and Chetan Batt

Nirma University, India

Classification of Agriculture IT-Technologies for Farm Management – a global approach

Christa Hoffmann, Erick Cantu, Matthias Nachtmann and Reiner Doluschitz

University of Hohenheim, Germany

The development of automated information systems to reduce the digital divide in agricultural communities

Laura Solera Thomas, Daniela Muñoz, José Joaquín Brenes, Gabriel Brenes, José Manuel Brenes, Carlos Angulo, Sonia Gómez and Fausto Viquez.

University of Costa Rica, Costa Rica

Development of a User Friendly Application for the Simulation and Design of Greenhouse Environments

Alberto José López López and Carlos Benavides León

University of Costa Rica

Mobile Applications and Strategy

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Chair: Raul Sequeira, Instituto Costarricense de Electricidad (ICE)

Developing Cross-platform Mobile and Web Applications

Xiang Mao and Jiannong Xin

University of Florida, USA

FarmTracking - alerts and tracking in a farming context

Jens Peter Hansen, Annette Hørning, Jens Bligaard and Nicolai Fog Hansen

Cand. Agro oecon., Denmark

Supply Chains of Products of Animal Origin: A Complex Network Model for the Strategic Management

Piero Nasuelli, Flavia Clemente, Remigio Berruto, Patrizia Busato

Università di Bologna, Italy

A BYOD Strategy for a Public University

Fedro S. Zazueta

University of Florida, USA

15:30-15:55 - Networking Break

Cafeteria Area (CA), College of Agricultural and Food Sciences

16:00-17:25 - Concurrent Sessions

Modelling and Simulation 1

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Javier Bonatti, University of Costa Rica

Modelling external and internal quality changes of fresh-cut rocket under different storage conditions

*Maria Luisa Amodio, Antonio Derossi, Leonarda Mastrandrea, and Giancarlo Colelli
Università di Foggia, Italy*

Intelligent Classification of Orange Growing Areas by Using Near-Infrared Spectra

*Xia Jiang, Yifan Cai, Simon X. Yang and Gauri S. Mittal
University of Guelph, Canada*

Applying a Markov approach as a Lean Thinking analysis of waste elimination in a Rice Production Process

*Eldon Caldwell
University of Costa Rica, Costa Rica*

WORKSHOP: Modeling Nutrient Movement with Sparse Data: Nutrient Tracking Tool* – A tool for water quality and quantity evaluation as affected by agricultural management practices

Ali Saleh, Taletan State University, USA

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Coordinator: Olman Quirós, University of Costa Rica, Costa Rica

See details on pages 17, 8, 19.

17:30-18:55 - Plenary Session- Round Table

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

IT Innovation

Moderator: Fedro Zazueta

Walter H. Mayer, PROGIS GmbH, Austria

Seishi Ninomiya, University of Tokyo, Japan.

Gerhard Schiefer, University of Bonn, Germany

Pete Vergot III, University of Florida, USA

Wednesday, July 29, 2014.

08:00-19:00 - Registration Desk Open

Reception Desk (RD), College of Agricultural and Food Sciences

08:30-9:55 - Concurrent Sessions

Water and Climate 1

Chair: Alejandra Rojas González, University of Costa Rica

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

An Elucidation System for Climatic Change Effect on Agriculture in Asian Monsoon Region

Kei Tanaka and Takuji Kiura

Agricultural Research Center NARO, Japan

How to reduce global warming potential of crop production in Northern China – a farmer's perspective analysis

Nan Ha, Til Feike and Enno Bahrs

University of Hohenheim, Germany

From Spectral Time Series Analyses To Drought Monitoring –GWP IDMP

János Tamás, Attila Nagy, János Fehér, Stelian Nistor and Éva Lehoczky

University of Debrecen, Hungary

Computer Design of Lateral Weirs System for Irrigation on Vegetative Strips

Walter F. Silva-Araya and Victor Vargas

University of Puerto Rico at Mayaguez, Puerto Rico

WORKSHOP: Developing Mobile Applications for Agriculture

Jianong Xin and Fedro S. Zazueta, University of Florida, USA

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Coordinator: Juan Roberto Mora, University of Costa Rica

See details on [pages 17, 8, 19](#).

10:00-10:25 - Networking Break

Cafeteria Area (CA), College of Agricultural and Food Sciences

10:30-11:55 - Concurrent Sessions

Water and Climate 2

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Chair: Álvaro Brenes, University of Costa Rica

CORBANA-BANACLIMA: A weather monitoring system to support the production of banana in Costa Rica.

José Antonio Guzmán Álvarez and Mauricio Guzmán Quesada
CORBANA, Costa Rica

Distributed water demand computation using remote sensing techniques

Alejandra Rojas González, Alvaro Sánchez, Jeffry Jiménez and Manrique Valverde
University of Costa Rica, Costa Rica

Pearl: A New Model for Evaluating and Managing Shellfish Growing Water Closures

Fred S. Conte and Abbas Ahmadi
University of California Davis, USA

Use of CEEOT Modelling System for Cost-Effective Targeting and Evaluation of Environmental Pollutants

Ali Saleh
Tarleton State University, USA

Modelling and Simulation 2

Room: Auditorium 2 (A2), College of Agricultural and Food Sciences

Chair: Róger García, University of Costa Rica

Modelling in FEM the soil pressures distribution caused by a tire on Rhodic Ferralsol soil

Omar González Cueto, Miguel Herrera Suárez, Elvis López Bravo and Fidel Diego Navas
Universidad Central "Marta Abreu" de las Villas (UCLV), Cuba; CIDIR, Oaxaca, México.

Hydrologic modelling analysis of 5 land use sceneries within a 20 year change in Bermúdez river's watershed.

Matías Adrián Chaves Herrera and Alejandra M. Rojas González
Universidad de Costa Rica, Costa Rica

Mathematical prog. models to increase land and water use efficiency in semi-arid NE-Brazil

Heinrich Hagel, Christa Hoffmann and Reiner Doluschitz
University of Hohenheim, Germany.

12:00-13:30 - Lunch

Cafeteria Area (CA), College of Agricultural and Food Sciences

14:00-15:00 - Plenary Session

Chair: Alberto López, University of Costa Rica

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Big Data and ICT in Agriculture

Seishi Ninomiya

University of Tokyo, Japan

15:05-16:05 - Plenary Session

Chair: Carlos Benavides, University of Costa Rica

Room: Auditorium 1 (A1), College of Agricultural and Food Sciences

Online Education: Teaching, Learning and Extension

Fedro Zazueta

University of Florida, USA

16:10-16:40 - Networking Break

Cafeteria Area (CA), College of Agricultural and Food Sciences

16:45-17:30 - Closing Ceremony

Auditorium 1 (A1), College of Agricultural and Food Sciences

17:30-18:00 - Networking and Cocktail

Cafeteria Area (CA), College of Agricultural and Food Sciences

18:10- Departure of the Attendants of Costarican Dinner (1)

Meeting Point: College of Agricultural and Food Sciences

19:00-20:00 - Costarican Dinner and Show “Tierra Tica”, Mirador Ram Luna

Thursday, July 31, 2014.

7:00-17:30 - Technical Field Tour (2)

Technical Field Tour: To **CORBANA** Research Center, La Rita, Pococí; **CORBANA** San Pablo’s Farm.

Presenters: Erick Bolaños and José Antonio Guzmán, **CORBANA**.

Coordinators: Fernando Vásquez and Álvaro Brenes, University of Costa Rica.

(1) (2) Attendance by registration only.

Workshop Details: Logistics Modelling

Title:	LOGISTICS MODELLING: Use of discrete event simulation models to optimize logistic problems
Organizers:	<p>Remigio Berruto DISAFA – University of Turin remigio.berruto@unito.it</p> <p>Patrizia Busato DISAFA – University of Turin patrizia.busato@unito.it</p>
Goals:	<p>Introduce to the use of simulation.</p> <p>Assess the advantages and disadvantages.</p> <p>Conduct the 10 steps process to conduct a simulation study.</p> <p>Formulate a hypothesis to simulate</p> <p>Use <i>extendsim</i>® to build discrete event models.</p> <p>Build a simple model.</p> <p>Understand differences between mean values, randomness and their effects on performance.</p> <p>Understand the importance of good data (when available).</p> <p>Interpret the results.</p>
Workshop description:	<p>This workshop will outline typical problems where simulation can provide useful results.</p> <p>Advantages and disadvantages of simulation studies will be presented, along with the steps necessary to build a good model. Main features of the <i>extendsim</i>® modeling software will be presented as well. One model will be built from scratch showing the use of the software <i>extendsim</i>® to describe a harvesting and transport problem.</p> <p>The model will be used in deterministic and stochastic modes. The simulation process and outcomes will be analyzed and discussed with the audience. Queue formation in different parts of the system will be studied using animation and graphs. Comparison between deterministic and stochastic models will be conducted.</p>
Requirements	Although not required, if you bring a laptop, you can download the demo version of the software at the following link: http://www.extendsim.com/prods_demo.html

Workshop Details: Modelling Nutrient Movement

Title:	Modelling Nutrient Movement with Sparse Data: Nutrient Tracking Tool* – A user-friendly tool for the evaluation of water quality and quantity as affected by various agricultural management practices
Organizer:	Ali Saleh TIAER, Tarleton State University saleh@tarleton.edu
Goals:	Introducing the latest technology-based tools to evaluate the environmental and economic impacts of various management practices on water quality and quantity.
Workshop description:	The Nutrient Tracking Tool (NTT) is a user-friendly web-based computer program that estimate nutrient (nitrogen and phosphorus) and sediment losses from fields managed under a variety of cropping patterns and management practices. The NTT includes a user-friendly web-based interface and is linked to the Agricultural Policy Environmental eXtender (APEX) model. It also accesses USDA-NRCS's Web Soil Survey to obtain field, weather, and soil information. NTT provides producers, government officials, and other users with a fast and efficient method of estimating the nitrogen and phosphorus credits generated from implemented conservation practices at the farm-level for water quality trading, as well as other water quality and quantity programs. Recently, NTT has been modified to evaluate the effects of forestry, as compared to other land use including fallow and agricultural lands, on water quantity and quality. The information obtained from the tool can help producers to determine the most cost-effective conservation practice alternatives for their individual operations and provide them with more advantageous options in a water quality credit trading and similar programs. Also, recently an international version of NTT (the next generation) has been developed for those countries without access to US data basis, such as soils and weather. During this presentation the next generation of NTT will be described and demonstrated.
Requirements	Although not required, if you bring a laptop, you can download the software used in the demo at the following link: nn.tarleton.edu/ntt

Workshop Details: Developing Mobile Apps

Title:	MOBILE: Developing Mobile Applications for Agriculture
Organizers:	<p>Jianong Xin IFAS, University of Florida xin@ufl.edu</p> <p>Fedro Zazueta UFIT, University of Florida fsz@ufl.edu</p>
Goals:	<p>Understand the importance of the technology nexus and the role of consumer devices</p> <p>Enumerate the different mobile application types, their advantages and disadvantages</p> <p>Select a development platform</p> <p>Describe design principles and a strategy for mobile application development</p> <p>Understand deployment channels (app stores, portals, etc.)</p> <p>Review examples of mobile apps in agriculture</p> <p>Create and run a simple “hello world” application</p>
Workshop description:	<p>This workshop will review contemporary trends in IT and the role of consumer devices. Advantages and disadvantage of different types of mobile applications will be discussed. Considerations and challenges in the selection of a mobile platform, as well as basic strategies and design principles for creating mobile applications will be presented. Development frameworks will be reviewed and one framework will be used to demonstrate how to create a simple running example using freeware.</p>
Requirements	<p>Links to resources and tools will be provided during the workshop.</p>