



SOUS LE PARRAINAGE DE MONSIEUR LE MINISTRE DE L'AGRICULTURE, DE LA PECHE MARITIME, DU  
DEVELOPPMENT RURAL ET DES EAUX ET FORETS

UNDER THE SPONSORSHIP OF MISTER THE MINISTER OF AGRICULTURE, FISHERIES, RURAL DEVELOPMENT,  
WATER AND FORESTS

## **PROGRAMME/PROGRAM**

2<sup>ème</sup> Conférence de l'Association Panafricaine du Génie Rural  
(PASAE - AfroAgEng) sur le thème

### **ROLE DU GENIE RURAL DANS LA RELEVÉ DES DEFIS D'UNE SECURITE ALIMENTAIRE GLOBALE**



2nd Conference of the Pan African Society for Agricultural Engineering  
(PASAE - AfroAgEng) on

### **ROLE OF AGRICULTURAL ENGINEERING IN MEETING THE CHALLENGE OF GLOBAL FOOD SECURITY**



*Du 10 au 13 septembre 2019,*

**Centre d'Accueil et de Conférences - Fondation Mohammed VI Rabat, Maroc**

## PROGRAM/PROGRAMME

### Monday/Lundi 9 september

15h30-18h00 Registration/Inscriptions

Conference Center/Centre de conférence Fondation Mohamed VI

Location : Avenue Allal Fassi, facing Cheikh Zayd Hospital Building

### Tuesday/Mardi 10 Septembre 2019

8h30 Registration/Inscriptions

Conference Center/Centre de conférence Fondation Mohamed VI

**Room/Salle Meziane BELFQIH**

### 9h-10h – Opening Session/Séance d'Ouverture

Joint opening session with the 5th Inter Regional Conference of CIGR on « Challenges of Water Mobilisation and Soil Conservation in Better Adapting to Climate Change »

Session d'ouverture commune avec la 5<sup>ème</sup> Conférence Inter Régionale de la CIGR sur le thème « Défis de Mobilisation de l'Eau et des Conservation des Sols pour une meilleure Adaptation aux Changements Climatiques »

- Mr Aziz FERTAHI, Président de l'ANAFIDE
- Le Représentant de Mr le Ministre de l'Agriculture, de la Pêche Maritime, du Développement Rural et des Eaux et Forêts
- Le Représentant de Mr Ministre de l'Équipement, du Transport, de la Logistique et de l'Eau
- Dr Ali HAMMANI, Directeur de l'IAV HASSAN II
- Mr Ahmed ELBOUARI, Président de l'Association des Ingénieurs du Génie Rural et du Réseau REMIG
- Dr Linus OPARA, (Afrique du Sud) Président de la CIGR et de AfroAgEng
- Mr Abdelhak LAITI, Représentation de la FAO au Maroc
- Dr Mady KOANDA, Directeur de l'Institut International de l'Eau et de l'Environnement (Burkina Faso)

### 10h-10h30 Coffee Break /Pause-Café

- **Room/Salle Abderrahmane CHENNAF**

### Session 1 Challenges of population growth and fluctuating demands, water shortages and temperature changes

- **10h30-10h45- Organisation et fonctionnement des systèmes nationaux de connaissance et d'innovation agricoles comme facteur déterminant de la sécurité alimentaire.** Pascal BERGERET, Directeur de l'Institut Agronomique Méditerranéen de Montpellier (IAMM) France
- **10h45-11h00- Agriculture solidaire, levier pour l'émergence de la classe moyenne en monde rural.** EL Mahdi ARRIFI, Directeur Général de l'Agence de Développement Agricole (ADA), Maroc

- **11h00-11h15-Progress on the establishment of the Pan-African Society for Agricultural Engineering** Jeff SMITHERS, School of Engineering and Center for Water Resources Research, University of KwalaZulu-Natal, **Afrique du Sud**
- **11h15-11h30-Rôle de l'Office National Interprofessionnel des Céréales et des Légumineuses dans l'approvisionnement en céréales, légumineuses et produits dérivés-ONICL, Maroc**
- **11h30-11h45- Future Oriented Collaborative Policy Development for Rural Areas and People Agricultural structures**, Pavel SIMEK<sup>1</sup>, Jan JAROLIMEK<sup>2</sup>, Jiri VANEK<sup>2</sup>, Pavel KOGUT<sup>3</sup>, Karel CHARVA<sup>4</sup>, Tuula LÖYTTY<sup>5</sup> -1. Czech University of Life Sciences Prague, **Czech Republic**, -2. Czech University of Life Sciences Prague, Czech Republic, 3. 21C Consultancy Limited, **United Kingdom**, 4. Czech Centre for Science and Society, **Czech Republic**, 5. Loytty Tuula-Maija, **Finland**
- **11h45-12h00- Politiques et stratégies nationales de mobilisation des eaux et de développement de l'Irrigation face aux défis alimentaires: Enjeux et perspectives-** Amadou ABDYOU, Coordonnateur du projet PASA2-Niamey-**Niger**
- **12h00-12h30 DISCUSSION**
- **12h30-14h00 LUNCH/DEJEUNER**
- **Session 2- Development of irrigation as a sustainable approach to increase food production**
  - **Room/Salle Abderrahmane CHENNAF**
- **14h-14h15- Adaptation du système californien aux conditions rurales africaines**, JEBBOUR Said, Office Régional de Mise en Valeur Agricole du Gharb, **Maroc**
- **14h15-14h30 Water microbiological quality in the LIS irrigation district**, I. M. DUARTE, H. MARQUES, M. ARAUJO, M.P. AMADOR, T.M VASCONELOS, R ; EUGENIO, H. DAMASIO, J.M. GONCALVES
- **14h30-14h45- Effets des pratiques d'agriculture de conservation sur l'humidité et la stabilité structurale d'un sol ferrugineux tropical sous rotation coton-céréales en zone sud-soudanienne du Burkina Faso-** Kambiré Fabèkourè Cédric<sup>1</sup>, Koulibaly Bazoumana<sup>2</sup>, Nana Jean Bosco<sup>2</sup>, Bourarach El Hassane<sup>3</sup> -1 : Institut de recherche en sciences appliquées et technologies / Centre National de la Recherche Scientifique et Technologique (IRSAT / CNRST. Burkina Faso), 2 : Institut de l'environnement et des recherches agricoles / Centre National de la Recherche Scientifique et Technologique (INERA / CNRST. Burkina Faso)- 3 : ex-Professeur à l'Institut Agronomique et Vétérinaire Hassan II (IAV- **Maroc**)
- **14h45-15h00- Stratégies de lutte contre la dégradation des terres dans une zone cotonnière. cas de la préfecture de l'est-mono au Togo.** Gbegnowou AYEBOU (1), Mianikpo Jean SOGBEDJI, Kadidiatou SOULEY-YERO, (1) Ecole Supérieure d'Agronomie, Université de Lomé, Laboratoire Interface Sciences du Sol, Climat et Production Végétale, Togo (2) Centre Régional AGRHYMET à Niamey, **Niger**
- **15h00-15h15- Estimation of crop water requirement and crop evapotranspiration for some indigenous vegetables in south western Nigeria**, Ademiju, T. A1, Osunbitan, J. A2, Ali, G.A3 and

Oseyanbu, R. J4 1,4 Dept. of Agricultural Education, Federal College of Education (Technical) Asaba Delta State, Nigeria-2 Department of Agricultural and Environmental Engineering, Obafemi Awolowo University, Ile – Ife, Osun- State, Nigeria- 3Dept. of Agricultural Engineering Technology, Federal Polytechnic, Ede, Osun state, **Nigeria**

- **15h15-15h30- Operational cereal yield forecasting based on Machine Learning in Morocco.**  
Mouanis LAHLOU, Prof IAV Hassan II, Riad BALAGHI, Chercheur INRA **Maroc**
- **15h30-16h00 Discussion**
- **16h00-16h30 Coffee Break/Pause Café**
- **16h00 – 19h00- PASAE COUNCIL MEETING :Réunion du Comité de Direction de l'Association Panafricaine du Génie Rural- Room/Salle pyramidale**

**Wednesday/Mercredi 11 Septembre 2019**

**Room/Salle Abderrahmane CHENNAF**

**Session 3 Side Event : Club of Bologna**

**Agriculture mechanization for sustainability in Africa**

- **8h30-9h00 The Club of Bologna: a landmark for the worldwide agricultural mechanization since 1989-** P. BALSARI, M. FIALA and H. BARTALI, Club of Bologna Management Committee Members– **Italy and Morocco**
- **9h00-9h30- The development of agricultural mechanization in sub-Saharan agriculture: the FEDERUNACOMA project,** Marco PEZZINI (FederUnacoma EU Secretary Affair and Club of Bologna Management Committee Member, FederUnacoma – **Italy**
- **9h30-10h00- The agricultural mechanization in Africa: a report from the Club of Bologna permanent Study Group,** Josse DE BAERDEMAEKER, (Katholic University of Leuven and Club of Bologna Member, **Belgium**
- **10h00-10h15- Perspectives de développement de la mécanisation agricole au Maroc,** BOURARACH El Hassan (1) et Badre EL HIMDY (2) - (1)Ex-professeur à l'IAV Hassan II (2) Professeur à l'IAV Hassan II (Département Energie et Agroéquipements, **Morocco**
- **10h15-10h30 Evolution des technologies et normes antipollution des moteurs agricoles : Etat de l'art et adoption dans les pays en développement.** EL AISSAOUI Abdellah , Regional Center of Agricultural Research, Settat, **Morocco**
- **10h30-10h45 Leveraging on sustainable agricultural mechanization to boost agricultural transformation in Africa.** Joseph J. MPAGALILE, Agric. Engineer (Sustainable Mechanization) UNFAO Regional Office for Africa, **Accra, Ghana**

- **10h45-11h15 Coffee Break/Pause Café**
- **11h15-12h30 Open Discussion/ROUND TABLE chaired by Dr Josse De Baerdemaeker, UKL Belgium**
- **12h30-14h00 LUNCH/DEJEUNER**
- **Session 4- Increasing productivity while reducing environmental impacts, and maintaining food safety and quality assurance.**
  - **Room/Salle Abderrahmane CHENNAF**
- **14h00-14h15 Rainwater Harvesting and Water Conservation as veritable impetus for Food Security**, Olorunwa Eric OMOFUNMI and Oluwaseun ILESANMI Department of Agricultural and Bioresources Engineering, Federal University Oye - Ekiti, **Nigeria**
- **14h15-14h30- Etude de l'effet du semis direct et de l'impact de l'ajout des eaux usées sur la mobilité de certains herbicides**, MAHER Hassnae (1,2), GHANIMI Ahmed (1), BENTATA Fatiha (2) , MOUSSADEK Rachid (2), ZOUAHRI Abdelmjid (2), DOUAIK Ahmed (2) et EL MAKHOUKHI Fadoua (3). 1) Université Mohammed V, Faculté des Sciences, Département de chimie, Laboratoire des Matériaux, Nanotechnologie et Environnement Rabat, Maroc. Centre des Sciences des Matériaux - 2) Institut National de la Recherche Agronomique (INRA), Rabat, Maroc.3) Université Mohammed V, Faculté des Sciences, Département de chimie, Equipe de Physico-Chimie des matériaux et nanomatériaux : Dépollution, Environnement et Développement Durable" **Maroc**
- **14h30-14h45- Performance Test of Six No-till Seeders for Crop Establishment in Arid Land Contxt : Case of wheat chickpea-Wheat Rotation in a vertisol in Chaouia Region of Morcco** EL AISSAOUI Abdellah , AL MASMOUDI Yassine, EL GHARRAS Oussama and EL YOUSFI Brahim. Regional Center of Agricultural Research, Settat, **Morocco**
- **14h45-15h00- Multivariate-Statistical Assessment of Heavy Metals for Agricultural Soils in Northwest Morocco (Sidi Slimane,Gharb)**, Najib EL KHODRANI<sup>1,3\*</sup>, Serine OMRANIA<sup>2</sup> ,Abdelmjid ZOUAHRI<sup>1</sup>, Ahmed DOUAIK<sup>1</sup>, Hamza IAAICH<sup>1</sup>,and Mohammed FEKHAOU<sup>3</sup>, <sup>1</sup>Research Unit on Environment and Conservation of Natural Resources, Regional Center of Rabat, National Institute of Agricultural Research (INRA),Rabat, **Morocco**, <sup>2</sup> Laboratory of Spectroscopy, Molecular Modeling, Materials and Environment, Faculty of Sciences, Mohammed V University, Rabat, **Morocco**, <sup>3</sup>Scientific Institute, Mohammed V University, Rabat, **Morocco**
- **15h00-15h15 Development of antibiotic resistance in the soil form the livestock manure in the Lis valley**, M.P AMADOR, I.M DUARTE, Instituto Politécnico de Coimbra, Escola Superior Agrária, CERNAS, Coimbra, **Portugal**
- **15h15-15h30- Agricultural Mechanization: Empirical Model of a Vertisol Evaporation as Tool for Management of Soil Practicability using Portable Lysimetric Station under Arid Land Context.** AL MASMOUDI Yassine (1,2), EL AISSAOUI Abdellah (2), IBNO NAMR Khalid (1)and EL YOUSFI Brahim (2) <sup>1</sup>Laboratory of Geosciences and Environment Technics, Chouaib Doukkali University, Faculty of Sciences, El-Jadida Morocco- <sup>2</sup> Laboratory of Agricultural Machinery, National Institute of Agronomic Research, Settat, **Morocco**
- **15h30-15h45- Performance evaluation and optimization of the maize shelling operation of the multi- purpose farm vehicle**, Denis NSUBUGA<sup>1</sup>, Isa KABENGE<sup>1</sup>, Ahamada ZZIWAAND<sup>1</sup> and Noble BANADDA<sup>2</sup>, <sup>1</sup>Department of Agricultural and Bio-Systems Engineering, Makerere Kampala ; **Uganda** <sup>2</sup>Department of Agricultural and Bio-Systems Engineering, Ames, Iowa,**USA**

- **15h45-16h00- Emerging innovation to reduce drudgery in cassava production in Africa**, Emmanuel Y.H. BOBOBEE and Pearl N. YAKANU, Department of Agricultural and Biosystems Engineering-Kwame Nkrumah University of Science and Technology, Kumasi. **Ghana**
- **16h00-16h30 DISCUSSION**
- **16h30-17h00 Coffee Break/Pause Café**
- **16h30-18h30 PASAE : AGM/Members Meeting /Réunion des membres de l'Association Panafricaine du Génie Rural ROOM/Salle CHENNAF**
- **20h-22H CONFERENCE DINNER -**

## Thursday/Jeudi 12 Septembre 2019

- **Session 5- Provide infrastructure, logistics and institutions needed to reduce pre and post-harvest losses.**

### **Room/Salle Abderrahmane CHENNAF**

- **8h30-8h45- - Critical review on the implication of food loss and waste on food security in Nigeria**, D. D. USMAN (1), B. AGYO (2), B. G. JAHUN (3) and A. ISA (4) (1,2)Department of Agricultural and Bioresource Engineering, Abubakar Tafawa Balewa University, Bauchi, **Nigeria**.- (2,4)Department of Agriculture, Federal College of Education (Technical), Gombe, **RDC**
- **8h45-9h00- Assessment of harvest and pre-harvest losses in wheat in Morocco**, M. Bouffirass (INRA), H.BARTALI (GR IAV Hassan II), A. YIGEZU (ICARDA), A.A NIANE (ICARDA), A. EL MGHARI (INRA), **Morocco**
- **9h00-9h15- Evaluation et Réduction des Pertes Post Récolte au Maroc**, Mohamed BELMAKKI H BARTALI (GR IAV Hassan II), M. BOUTFIRASS (INRA)<sup>o</sup>, **Maroc**
- **9h15-9h30- Application of superabsorbent polymers (SAP) as desiccants to dry maize and reduce aflatoxin contamination** Duncan O. MBUGE<sup>1</sup>, Renata NEGRINI<sup>2</sup>, Livine O. NYAKUNDI<sup>1</sup>, Serge P. KUATE<sup>3</sup>, Ranajit BANDYOPADHYAY<sup>4</sup>, William M. MUIRU<sup>1</sup>, Baldwyn TORTO<sup>3</sup>, Raffaele MEZZENGA<sup>2</sup>- 1. University of Nairobi; 2. ETH Zurich; 3. Icipe 4. International Institute of Tropical Agriculture (IITA), **Nigeria**
- **9h30-9h45- Moisture Dependent Mechanical Properties of Moringa oleifera seeds**, ADEJUMO Oyebola Ismaila (1), OWOEYE, OLANIYI David (2), DARAMOLA Oyewole Oj(2) and ADEJUMO Ganiyat Adenike (2) -(1)Department of Agricultural and Bioenvironmental Engineering The Federal Polytechnic, Bida, Niger State, Nigeria. (2)Directorate of Entrepreneurship Education and Development, The Federal Polytechnic, Bida, Niger State, **Nigeria**.
- **9h45-10h00- - Determination of Moisture and Temperature Variation in Wet Grains over Time and Space to Effect Desiccant Drying** Peter Kang'ethe KIMANI, Duncan Onyango MBUGE, 1. University of Nairobi Department of Environmental and Biosystems Engineering, **Kenya**
- **10h00-10h30 Discussion**



- **10h30-11h00 Coffee Break/Pause Café**

**Session 6 Increasing productivity while reducing environmental impacts, and maintaining food safety and quality assurance.**

- **11h00-11h15- Phytochemical and Nutritional Composition of ten (10) edible leafy vegetables in Ebonyi State**, Friday Nwalo Nweke (1), Celestine Azubike Afiukwa (2), Godwill Azeh Engwa (3), Joseph Anayo Uraku (4), Beatrice Elohor Ifie (5), Kingsely Ekene Nwagu (1), Emmanuel Okechukwu Ogueji (6) and Emmanuel Nwaforagu Uchewa (7) (1)Department of Biology/Microbiology/Biotechnology, Alex Ekwueme Federal University Ndufu-Alike Ikwo, Nigeria (2)Department of Biotechnology, Ebonyi State University, Abakaliki, Nigeria (3)Department of Chemical Sciences, Godfrey Okoye University, Enugu, Nigeria (4)Department of Biochemistry, Ebonyi State University, Abakaliki, Nigeria (5)West Africa Centre for Crop Improvement (WACCI), College of Basic and Applied Sciences, University of Ghana, **Ghana** (6)Department of Fisheries and Aquaculture, Alex Ekwueme Federal University, Ndufu-Alike Ikwo, Nigeria (7) Department of Animal Science, Ebonyi State University, Abakaliki, **Nigeria Nigeria;**
- **11h15-11h30- Design, Fabrication and Testing of a Motorized and Manual Ginger Size Reduction Machine**, Gbabo A.-(1), Oyebamiji S (1), Abdulraheem O (1), Gana I.M.(2) and V.A Thomas (1)(1)Department of Agricultural & Bioresources Engineering, Federal University of Technology Minna, Niger State Nigeria(2) Department of Agricultural & Bio-environmental Engineering, Federal Polytechnic Bida, Niger State **Nigeria**
- **11h30-11h45- The role of land husbandry practices in achieving food safety**, UMUHOZA Ernestine (1), MUNYESHYAKA Jean Damascene (2) --(1).Rwanda Agriculture and animal resources board --(2) Rwanda Agriculture and animal resources board , **Rwanda**
- **11h45-12h00- Extension Services and Promotional of Climate Smart Agriculture in West African**, Michael ADEDOTUN OKE, Executive Director of Michael Adedotun Oke Foundation Abuja, Nigeria, **Nigeria** POSTER
- **12h00-12h30 DISCUSSION**
- **12h30-14h00 LUNCH/DEJEUNER**
- **Session 7 Engineering controlled environments for agriculture for a sustainable future.**
  - **Room/Salle Abderrahmane CHENNAF**
- **14h00-14h15 Agricultural Spraying Technologies: State of Art and Perspective of Adoption in Developing Countries** - EL AISSAOUI Abdellah<sup>1</sup>, LEBEAU Frédéric<sup>2</sup>, DESTAIN M-France<sup>3</sup>, HOUMY Karim<sup>4</sup>, EL BAHIR Lhoussain<sup>5</sup>, - 1 Laboratory of Agricultural Machinery and Energy, Regional Center of Agricultural Research, Settat Morocco - 2, 3Unit of Precision Agriculture, Gembloux Agro-Bio Tech, University of Liege, Gembloux, **Belguim.** - 4 Department of Agricultural Engineering, Institute of Agronomic and Veterinary Science, Rabat, Morocco - 5 Department of Electrical Engineering, National School of Applied Science, Marrakech, **Morocco**
- **14h15-14h30 Application of electromagnetic tools and GIS in monitoring and management of soil quality** Houria DAKAK<sup>1</sup>, Zouahri Abdelmjid ZOUAHRI<sup>1</sup>, Hamza AAICH<sup>1</sup>, Ahmed DOUAIK<sup>1</sup>,

Hasna YACHOU1, Ahmed GHANIMI2. 1. National Institute of Agronomic Research (INRA), Rabat.2. Mohammed V University, Faculty of Sciences, Department of Chemistry, Rabat, **Maroc**

- **14h30-14h45 Development of a solar energy powered fixed water recirculation system for aquaculture in arid conditions.** Julius K. TANGKA1 and WIRSIY F Yusuf2 1,2 Renewable Energy laboratory, FASA, University of Dschang, **Cameroon**.
- **14h45-15h00 Empirical Model for Tracking Hydraulic Performance of Photovoltaic Pumping System Using Solar Radiation Data-** Assia HARKANI 1,2, Hajar EL KHALFI2 , Hicham FIGHI FASSI1, and Abdellah EL AISSAOUI 2-1Laboratory of Engineering, Industrial Management and Innovation FST, Settat,Morocco, 2- Laboratory of Agricultural Machinery and Energy, INRA, Settat **Morocco**
- **15h00-15h30 DISCUSSION**
- **15h30-16h00 Coffee Break/Pause Café**
- **16h00 -17h00 Closing**
- **Friday/Vendredi 13 september 2019**
- **Technical Visit/Visite Technique to Meknes Region**
- **Departure at 7:00 am and return at 6 pm to Rabat**
- **Saturday/Samedi 14th-Sunday/Dimanche 15th September**  
Optional post conference tours

The post conference tours (either to Fes or to Marrakech) **will depart on saturday 14th september morning 6h30 and return to Rabat on Sunday 15th at 6h:00 pm**

**CONTACT:** Conference coordinator

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