



The research team 'Environment and Natural Resources Management' at the Higher School of Technology Khenifra

first edition of the International E-conference on:

# CLIMATE NEXUS PERSPECTIVES: WATER, FOOD AND BIODIVERSITY

## Conference programme



June 04th, 2020

Online conference: Microsoft teams



For information contact one of the co-coordinators:

Pr. S.I. Cherkaoui: [I.cherkaoui@usms.ma](mailto:I.cherkaoui@usms.ma)

Pr. L. EL Youssfi [l.elyoussfi@usms.ma](mailto:l.elyoussfi@usms.ma)

<https://estk.ac.ma/ESTK/55-actualites/328-climate-nexus-conference-june-2020>

**Opening Session (09.00 am)**

(Moderator: Pr. Lahcen EL YOUSSEFI)

**USMS President's Speech, Pr Nabil HMINA**

**ESTK Director's Speech, Pr Mohamed BOUACHRINE**

**Organizing Committee's Speech**

**Keynote speech 1 (09.15-09.25):**



**Climate change and agricultural water management in central Chile**

**Pr Diego RIVERA SALAZAR, Chile**

**Universidad del Desarrollo  
Principal Research of the CRHIAM  
Faculty of Agriculture Engineering,  
University of Concepcion**

**Keynote speech 2 (09.25-09.35):**



**Food Water Energy Nexus**

**Pr Alex GODOY FAUNDEZ, Chile**

**Director of Sustainability Research Centre &  
Strategic Resource Management. Facultad de  
Ingenieria, Universidad del Desarrollo**

**Keynote speech 3 (09.35-09.45):**



**Impact des changements climatiques sur  
l'aquaculture marine**

**Dr. Yassine OUAGAJJOU, Morocco**

**Head of the Station of Shellfish and Technology  
Research, National Institute of Fisheries Research,  
Amsa,**

**Keynote speech 4 (09.45-09.55):**



**Operationalization of the Water-Energy-Environment  
Nexus: challenges and opportunities**

**Pr. Ousmane SEIDOU, Canada**

**Department of civil engineering, University of  
Ottawa, adjunct professor at the United Nations  
University, Institute for Water, Environment and  
Health**

**Discussion**

>>>>Next sessions will be in parallel (at the same time)>>>>

>>>>Then a Closing Session at the end with Organizers, Moderators and all participants.

*1<sup>st</sup> Session: Climate change: impact and biodiversity resilience;  
Nature-based approaches to climate change mitigation and adaptation;  
Evaluation of eco-systemic services*

**(Moderator & rapporteur: Pr. Sidi Imad CHERKAOUI)**

- 10.00-10.10: EL Mohamed El Mderssa(1), Hassan Benjelloun(2), Omar Zennouhi(1), Hiham Ikraoun(1), Laila Nassiri(1) et Jamal Ibijbijen (1)  
(Faculté des Sciences, Meknès, Université Moulay Ismail1, Laboratoire de Pédologie Forestière, ENFI, Salé 2, Morocco). Écosystèmes forestiers marocains et changements climatiques : Stratégies d'adaptation et d'atténuation (cas des forêts du Moyen Atlas central)
- 10.10-10.20: Hiham Ikraoun, Mohamed El Mderssa, Laila Nassiri et Jamal Ibijbijen (Faculté des Sciences Meknès, Université Moulay Ismail, Morocco)  
Evaluations économique des biens et services écosystémiques dans un contexte de changement climatique : Cas de la forêt de Zitchouéne (Plateau central d'Oulmés)
- 10.20-10.30: Mohamed Boulmane1, Hayat ubrahim2, Mohammed Halim3, Mark R. Bakker4 & Laurent Augusto4 (CRI Béni Mellal-Khénifra1, CRF 2, FS Rabat- UM5 3, INRA-Bordeaux 4, France, Morocco). Évaluation du Stock de carbone dans certaines forêts du Moyen Atlas Marocain
- 10.30-10.40: JAMOULI Aya1, ALLALI Khalil 2 Hassan II Institute of Agronomy and Veterinary Sciences, Rabat 1; National School of Agriculture, Meknes2, Morocco (IAV Hassan II, Morocco) Valuation of ecosystem services in Africa: A literature review
- 10.40-10.50: Brahim ABOUELABBES (Association Marocaine pour l'Écotourisme et la Protection de la Nature, Rabat, Morocco) Fish biodiversity in inland fresh waters, what conservation action to undertake as response of the increasing demand for food, recreation and climate change impact.
- 10.50- 11.00: ELOUDI Hasna, Samira KRIMISSA, Hanane REDDAD, Fatima ABOUTAIB, Mustapha NAMOUS, Mustapha OUYAH (Polydisciplinary Faculty, Sultan Moulay Slimane University, Morocco) Variabilité spatio-temporelle de LULC: impact des changements climatiques globaux et effet sur la dégradation du sol
- 11.00-11.10: Ettaqy A. 1,2, Taha A. 3, El Ghiouane D. 3, El Khou A. 3, Boulli A. 2 et Abbas Y. 3 (Regional Direction of water and forest, Agriculture ministry, Beni Mellal 1; Faculty of Sciences and Technics, 2; Polydisciplinary Faculty, Sultan Moulay Slimane University3, Morocco ) New data on the ecological distribution of *Euphorbia resinifera* in the Beni Mellal Atlas
- 11.10-11.20: Hassane Abd-dada, Said Bouda, Abdelmajid Haddioui (Faculté des Sciences et Techniques, Université Sultane My Slimane, Béni-Mellal, Morocco)  
Etude de la diversité phénotypique d'une plante endémique du Maroc (*Euphorbia resinifera* berg)
- 11.20-11.30: GHANIMI Ridwane, CHERKAOUI Mohamed and OUHAMMOU ahmed (Faculté des sciences Semlalia Université Cadi Ayyad, Marrakech, Morocco)  
Ethnobotanical study of edible wild plants in the commune of Sidi Abdellah Ghiate, Al Haouz Province, Marrakesh.
- 11.30-11.40: HANA Nabil1 2; Corinne ROULAND LEVEVRE 2 (Ecole Nationale Forestière d'Ingénieurs, Salé, Maroc 1; Institut de Recherche et Développement, Institut d'Ecologie et des Sciences de l'Environnement de Paris2, France).  
Structure des communautés d'organismes du sol et conséquence sur le fonctionnement d'écosystèmes forestiers sous l'impact du changement climatique.
- 11.40-11.50: ICHEN Abdellah (Université Mohammed V, Faculté des Sciences, Rabat, Morocco). Dynamique de la population de la Perdrix Gamba (*Alectoris barbara*) au Maroc : Analyse des prélèvements de la chasse et les facteurs climatiques influençant.
- 11.50-12.00: ICHEN Abdellah (Université Mohammed V, Faculté des Sciences, Rabat, Morocco).  
Dynamique des populations de lièvre (*Lepus capensis*) et de lapin de garenne (*Oryctolagus cuniculus*) au Maroc : analyse des prélèvements de la chasse et les facteurs climatiques influençant.
- 12.00-12.10 : W. BOUTA, T. EL RASAFI, S. BOUDA, M. ELHANSALI, A. HADDIOU (FST Béni Mellal/USMS)  
Caractérisation biochimique de quelques populations marocaines du lentisque (*Pistacia Lentiscus* L.)
- 12.00-12.10 : Youssef AIT BELLA, Said BOUDA, KHACHTIB Youssef, Abdelmajid ADDIOUI (Faculté des Sciences et Techniques, Université Sultan Moulay Slimane, Béni Mellal, Morocco)  
Etude de la diversité génétique du prunier au Maroc
- 12.10-12.20 : Achiban Hassan (Parc National d'Ifrane).  
Reconstitution des précipitations des deux derniers siècles (1804- 2016), dans la partie Nord du Parc National d'Ifrane, en se basant sur la dendroclimatologie.

**Discussion**



**2<sup>nd</sup> Session: Sustainable management of water resources and impacts of climate change/ Climate, Water, Energy, Food "Nexus"**

**(Moderator and rapporteur : Pr. Ousmane SEIDOU)**

- **10.00-10.10:** Kamal AIT OUHAMCHICH\*, Abdelkarim ARIOUA, Ismail EL KARAOUI, Driss ELHAMDOUNI (FST Benimellal, USMS, Morocco)  
Impact of climate variation on Wastewater treatment case Zawiat cheikh city, Morocco
- **10.10-10.20:** BAQLOUL Asmae, Enno Schefuß , Lydie Dupont , Martin Kölling , Jeroen Groeneveld , Xueqin Zhao, Hanane Reddad, Lhoussaine Bouchaou , Ilham Bouimetarhan. (Faculté des Sciences, Université Ibn Zohr, Morocco) Effets du climat et de l'utilisation des terres sur les changements hydrologiques et végétaux au cours des trois derniers millénaires.
- **10.20-10.30:** ABOUTAIB Fatima (Polydisciplinary Faculty, Sultan Moulay Slimane University, Morocco)  
Etude qualitative et quantitative de l'érosion Hydrique : Exemple de la partie amont du bassin versant du barrage Ahmed El Hanssali.
- **10.30-10.40:** BOUDARFA Fatima, El mahjoub GHALOULI, Mohamed EL HAFA et Hassan OULAD ALI (FS Agadir/UIZ, Morocco) L'impact des changements climatiques sur la qualité des eaux de la retenue Youssef Ben Tachafine (sud de Maroc)
- **10.40- 10.50:** Tarik ELORFI 1,2, Mohamed EL GHACHI 1 et Sébastien LEBAUT 2 (Laboratoire « DPRP » USMS 1, Morocco ; Unité de Recherche LOTERR Université de Lorraine - France)  
Apports de la télédétection dans l'étude diachronique de l'évolution spatio-temporelle de la retenue d'eau du barrage d'Ahmed El Hansali de 2002 à 2018. (Haut bassin versant de l'Oued Oum ErRbia- Maroc)
- **10.50- 11.00:** 12.50-13.00 Ihssan ELOUADI1,2, Driss OUAZAR2, et Lahcen EL YOUSSEFI3 (National School of Mines of Rabat1, Mohammadia School of Engineering, Mohamed V University2, Khenifra Higher School of Technology, USM University, Morocco) A Decision Support model to Improve Water Resources Management in agriculture: Cases of the East of Morocco (Ait Ben Yacoub)
- **11.00-11.10:** KARAOUI Ismail (FP, USMS, Benimellal, Morocco) Climate change effects on land use /cover variation and flood intensity.
- **11.10-11.20:** Mourad ADDICH, Noureddine EL BARAKA, Abdellatif LAKNIFLI, Abdelilah FATNI, Aziz AIT TALEB, Abdellatif EL HAMMADI (Polydisciplinary Faculty of Taroudant, Ibn Zohr University, Morocco)  
Élaboration et caractérisation des membranes céramiques à faible coût à base du sable marocain : application au traitement des eaux.
- **11.20-11.30:** AIT HADDOU Mohamed, KABBACHI Belkecem, EZAIDI Abdelakrim & LABBACI Adnan (Faculté des Sciences Agadir, Université Ibn Zohr, Morocco) Caractérisation de la variabilité spatiale et temporelle des précipitations et de l'agressivité des pluies : Cas du bassin versant d'Issen, Sw-maroc
- **11.30-11.40:** FAOUZI EL Houssna1, Abdelkrim ARIOUA2, Ismail KARAOUI1, Driss ELHAMDOUNI1, Kamal AIT OUHAMCHICH1, Fatima Zohra RAJI1, Mohammed HSSAISOUNE 2 (Faculté des Sciences et Techniques Beni Mellal USMS 1. Faculté des Sciences Agadir, UIZ, Morocco).  
Epuration et valorisation des eaux usées dans le domaine agricole de la région Béni Mellal-Khénifra : Exemple pratique d'adaptation de l'impact du CC sur les ressources en eau
- **11.40-11.50:** MAZOUZI Kaouthar, Aziz ABOUABDILLAH2, Rachid BOUABID2, Youssef BROUZIYNE3, E. M. EL FALEH1 (Université Moulay Ismail, Faculté des Sciences, UMI1 ; Ecole nationale d'Agriculture de Meknès2, UM6P, Morocco)  
Modélisation hydrologique du bassin versant du haut Ouargha à l'aide du modèle SWAT : impact des changements climatiques et scénario d'adaptation
- **11.50-12.00:** Bratian BUSOLICH (University of conception, Chile)  
Reconversion of water infrastructure in the Ñuble river
- **12.00-12.10 :** Camilo SOUTO, Eduardo HOLZAPFEL, Luciano QUEZADA (Universidad de Concepcion, Chile)  
Comparison of surface and subsurface drip irrigation in industrial tomato using NDVI.
- **12.10-12.20 :** Ousmane SEIDOU (University of Ottawa, Canada)  
Planning and Management of Large Hydraulic Infrastructures using Water-Energy-Environment-Food Nexus perspective - Case of the Niger Basin
- **12.20-12.30 :** Nabil EL JAOUHARI1,2; Aziz ABOUABDILLAH2, Rachid BOUABID2, Mohamed BOURIOUG2, Mohamed CHAOUI1 (Faculty of Sciences of Meknes1, Moulay Ismail University, ENA de Meknes2, Morocco) Smart Irrigation with a Climate-Soil-Plant-Water Continuum monitoring in an Apple orchard in Morocco: A tool for a climate change adaptation strategy.
- **12.30-12-40:** Lahcen EL YOUSSEFI1, Wesley DOORSAMY2 Adil AGHZAR1, Sidi Imad CHERKAOUI1, and Ihssan EL OUADI3, Alex Godoy FAUNDEZ4, Diego RIVERA SALAZAR 4,5 (EST Khenifra , SMS University, Morocco 1, Institute for Intelligent Systems, University of Johannesburg, South Africa2, ENSMR Rabat 3; Facultad de Ingenieria, Universidad del Desarrollo, Chile 4, Faculty of Agriculture Engineering, University of Concepcion, Chile5)  
Review on Water Food Energy Nexus in Africa: Morocco and South Africa cases

**Discussion**

**3<sup>rd</sup> Session: Sustainable management of aquaculture resources and Impact of climate change/Marine biology and fisheries**

**(Moderator & Rapporteur : Pr. Adil AGHZAR)**

- **10.00-10.10:** Rabia Ajana 1, Mohamed Techetach 2, Younes Saoud 1 ((1) FS Tetouan/UAE, (2) FP Safi/UKA, Morocco) Cycle de reproduction d'*Octopus vulgaris* sur les côtes méditerranéennes marocaine et l'éventuel impact du changement climatique sur son évolution
- **10.10-10.20 :** El Mourabit Youssef 1, Ait Alla Aichaa 1 and Moukrim Abdellatif 2 ((1) FS Agadir/UIZ, (2) FS Tétouan/UAE, Morocco)  
Study of the length-weight relationship of *Mytilus galloprovincialis* (Lmk,1819) in Anza-Taghazout coasts (South of Morocco)
- **10.20-10.30:** Meriem AHENSAL 1, Yassine OUAGAJJOU 2, Fatima ELAAMRI 2, Adil AGHZAR 3, Nadia BERDAY 1, Mohamed ID HALLA 2 ((1) IAV Hassan II, (2) INRH Amsa-Casablanca, (3) EST Khénifra/USMS, Morocco)  
Ecophysiology pattern of captive clam *Ruditapes decussatus* for aquaculture improvement
- **10.30-10.40 :** Mohamed TECHETACH 1, Hafid ACHTAK 1, Fatima RAFIQ 1, Abdallah DAHBI 1, Rabia AJANA 2, Younes SAOUD 2 ((1) FP Safi/UKA, (2) FS Tétouan/UAE, Morocco)  
Impact du changement climatique sur la biologie de la reproduction du maquereau *Scomber colias* dans les côtes marocaines
- **10.40-10.50:** IZZABAHA O. 1,3, Gjije A. 1, Dergoun A. 1, Saad Z. 1, Ait Chattou M. 1, Chairi H. 2, Idhalla M. 3 ((1) INRH Dakhla, (2) FP Larache/UAE, (3) INRH Casablanca, Morocco)  
First trial on rearing European sea bass *Dicentrarchus labrax* in floating cages in Dakhla bay- SW Morocco, Atlantic Ocean
- **10.50-11.00 :** Valérie Cornet 1, Abderrahim Ouaach 1, S.N.M. Mandiki 1, Enora Flamiona 1, Aline Ferain 2, Mélusine Van Larebeke 2, Benjamin Lemaire 2, Felipe E. Reyes López 3, Lluís Tort 3, Yvan Larondelle 2, Patrick Kestemont 1 ((1) University of Namur Belgium, (2) Université Catholique de Louvain Belgium, (3) Universitat Autònoma de Barcelona Spain)  
Environmentally-realistic concentration of cadmium combined with polyunsaturated fatty acids enriched diets modulated non-specific immunity in rainbow trout
- **11.00-11.10 :** Lamraouhi N. 1, Hamdi H. 1, and El Amrani S. 2 ((1) INRH Casablanca, 2 FS Ben Msik/UHII, Morocco)  
Development and reproduction of the grey mullet, *Mugil cephalus* from the south coastal waters of Morocco.
- **11.10-11.20:** Mohamed ELMOUSSAOUI 1, Najem ABOUNAHHEL 2, Samah FETTACH 2, Younes SAOUD 1, Yassine OUAGAJJOU 2 ((1) FS Tétouan /UAE, (2) INRH Amsa, Morocco)  
Optimisation des conditions et du coût de production en masse des phytoplanctons en éclosion
- **11.20-11.30 :** Hajar Bouzaidi 1, Ouassima Haroufi 1, Aymane Khaili 1, Chaib El Fanichi 2, Mustapha Maatouk 1, Bouchta El-Moumni 1, Mouna Daoudi 2 (1FST Tanger/UAE, 2 INRH Tanger, Morocco)  
Évaluation du stock et distribution spatiale de l'espèce *Callista chione* (Linnaeus, 1758) dans la Méditerranée occidentale
- **11.30-11.40:** El mahjoub GHALOULI 1, Fatima BOUDARFA 1; Mohamed EL HABA 1 and Hassan OULAD ALI 1 ((1) FS Agadir/UIZ, Morocco)  
Impact des changements climatiques sur la communauté phytoplanctonique du littoral Aglou-Sidi Ifni (Côte atlantique marocaine)
- **10.40- 10.50 :** Jaouad ABOU OUALID 1, Aicha AIT ALLA 1, Abdellatif MOUKRIM 2 and Pablo José LÓPEZ-GONZÁLEZ3 ((1) FS Agadir/UIZ, Morocco, (2) FS Tétouan/UAE, Morocco; (3) Facultad de Biología, Universidad de Sevilla, Spain)  
Geographic range expansion toward the north of *Leptogorgia dakarnesis* Stiasny, 1939 (Gorgoniidae: Octocorallia: Cnidaria) in Eastern Atlantic
- **11.50-12.00 :** El Mustafa Ait Chattou 1, Abdelhakim Naourani 2, Abderrahmane Abouhala 2, Mohamed Idhalla 3, Hafida Bergayou 4, Abdellatif Moukrim 5 ((1) INRH Dakhla, (2) IAV Hassan II, (3) INRH Casablanca, (4) FS Agadir/UIZ, (5) FS Tétouan/UAE, Morocco)  
Essai de captage des naissains de moule *Perna perna* dans la Baie de Dakhla (Sud du Maroc).

**Discussion**

#### 4<sup>th</sup> Session: Climate change and sustainability of agricultural production

(Moderator & Rapporteur : Pr. Aziz ABOUABDILLAH/ Pr. Youssef BROUZIYNE)

- 10.00-10.10: Youssef BROUZIYNE 1, A.CHEHBOUNI 1; A.ABOUABDILLAH 2, J. HALLAM 3, F. MOUDDEN 4, L. BENAABIDATE 5 (International Water Research Institute, UM6P 1; National School of Agriculture, Meknes 2; National Institute for Agricultural Research-Agadir3; Faculty of Sciences, Moulay Ismail University, Meknes4; Faculty of Sciences and Technology, University of Sidi Mohamed Ben Abdellah, Fez 5, Morocco)

Making rainfed crops resilient to potential climate change impacts: Modelling sustainable options

- 10.10-10.20: FAROOQ Muhammad (College of Agricultural and Marine Sciences, Sultan Qaboos University, Oman)

Climate-Smart Strategies for Sustaining Wheat Production

- 10.20-10.30 : Anouar Benamar SEBAIBI et LARID, M. (Faculté des sciences de Nature et de la Vie. Université Abdelhamid Ibn Badis, Algérie) la

Etude des sols et modalités de gestion durable des terres au niveau de la région de Ain Témouchent (Nord-Ouest de l'Algérie).

- 10.30-10.40: HAMDANI Anas<sup>1,2</sup>, CHARAFI Jamal<sup>1</sup>, BOUDA Said<sup>2</sup>, EL KADI Mohamed<sup>1</sup>, RAZOUK Rachid<sup>1</sup> (National Agricultural Research Institute of Meknes<sup>1</sup> ; FST Beni Mellal, USMS -2, Morocco).

Screening for water stress tolerance in early plum (*Prunus domestica* L.) cultivars using agronomic and physiological traits.

- 10.40-10.50: Mohamed Boulmane<sup>1</sup>, Hayat ubrahim<sup>2</sup>, Mohammed Halim<sup>3</sup>, Mark R. Bakker<sup>4</sup> & Laurent Augusto<sup>4</sup> (CRI Béni Mellal-Khénifra<sup>1</sup>, CRF 2, FS Rabat- UM5 3, INRA-Bordeaux 4, France, Morocco)

The potential of Eucalyptus plantations to restore degraded soils in semi-arid Morocco (NW Africa)

- 10.50-11.00: Lahoucine Gourdo<sup>1\*</sup>, Khadija Achgar<sup>1</sup>, Hicham Fatnassi<sup>2</sup>, Hassan Demrati<sup>1</sup>, Ahmed Wifaya<sup>3</sup>, Rachid BOUHARROUD<sup>3</sup>, Ahmed Aharoune<sup>1</sup>, Lahcen Bouirden<sup>1</sup> (FS Agadir, UIZ 1 ; INRA, Univ. Nice Sophia Antipolis, CNRS, institut Sophia Agrobiotech, France 2; INRA Agadir 3, Morocco).

Effect of a passive solar heating system on the microclimate and tomato crop yield

- 11.00-11.10: Omnia EL BERGUI 1,2, Aziz ABOUADILLAH<sup>2</sup>, Rachid BOUABID<sup>2</sup>, Youssef BROUZIYNE<sup>3</sup>, Mohamed BOURYOUG<sup>2</sup>, Nabil EL JOUHARI 1,4 (IAV Hassan III<sup>1</sup>, Rabat and ENA-Meknes<sup>2</sup>, UM6P 3, Faculty of Sciences of Meknes, Moulay Ismail University<sup>4</sup>, Morocco)

Assessment of regulated deficit irrigation on potatoes (*Solanum tuberosum*) as a climate change adaptation strategy in Morocco

- 11.10-11.20: Fatima RAFIQ, Mohamed TEHETACH, Hafid ACHTAK, Abdallah DAHBI (Faculté Polydisciplinaire de Safi, Université Cadi Ayyad, Morocco)

Impacts des changements climatiques sur les céréales dans la province de Safi (1994-2015)

- 11.20-11.30: SAGHOURI EL IDRISSE Imane<sup>1, 2</sup>, KETTANI Rajae<sup>1</sup>, FERRAHI Moha<sup>1</sup>, BRHADDA Najiba<sup>2</sup>, ZIRI Badea<sup>2</sup> (National Institute of Agronomic Research (INRA) of Meknes 1; Faculty of Sciences Ibn Tofail University<sup>2</sup>, Morocco)

Evaluation and selection of varieties of durum wheat (*Triticum durum* Desf.) resistant to drought

- 11.30-11.40: Zarzar Rania<sup>1,2</sup>, Blenzar Abdelali<sup>1</sup>, Asfers Adil<sup>3</sup>, Ait Houssa Abelhadi<sup>3</sup>, Kodad Ossama<sup>2</sup> (Faculté des Sciences. University Moulay Ismail 1; ENA de Meknes<sup>2</sup>, Centre de Formation et de Recherches, Louata, Providence Verte<sup>3</sup>, Morocco)

Year effect on blooming and harvesting time and fruit weight in tow peach varieties grown under Sais valley climatic conditions

- 11.40-11.50 : Latifa Zhouri<sup>1, 2</sup>, Rajae Kallida<sup>2</sup>, Naima Shaimi<sup>3</sup>, Philippe Barre<sup>4</sup>, Florence Volaire<sup>5</sup>, Malika Fakiri<sup>1</sup> (Faculté des Sciences Techniques de Settat, Université Hassan 1er (1) ; Centre Régional de la Recherche Agronomique de Rabat<sup>2-3</sup> Morocco; INRA UR4 (4) ; INRA USC 1338 France)

Productivity traits of cocksfoot genotypes in three contrasting environment in Morocco

- 11.50-12.00 : El Baji Mina<sup>1,2</sup>, En-Nahli Said<sup>2</sup>, Hanine Hafida<sup>1</sup>, Kodad Ossama<sup>2</sup> (Faculté des Sciences et Techniques. Université Sultan Moulay Slimane 1; ENA de Meknes<sup>2</sup>, Morocco)

Year and environment effects on the fruit physico-chemical traits in sweet cherry cultivated under southern Mediterranean climate in Morocco.

- 12.00-12.10 : JLIBENE Mohammed (Independent researcher, Former researcher at INRA Maroc, Morocco)

Partition of rainfall variation effect on crop productivity into amount and distribution effects

- 12.10-12.20 : Aziz ABOUABDILLAH<sup>1</sup>, Rachid BOUABID<sup>1</sup>, Omnia EL BERGUI<sup>1,2</sup>, BENBRAHIM<sup>3</sup> M., IBNDAHOU IDRISSE A.<sup>3</sup>, KEBBAJ N<sup>3</sup> (ENA Meknes<sup>1</sup>, IAV Hassan II<sup>2</sup>, Sidi Mohamed Ben Abdellah University<sup>3</sup>, Morocco)

Combining IT and agronomic sciences for a sustainable water management: Innovative app for farmers capacity building on irrigation Discussion

Discussion



**5<sup>th</sup> Session: Food security challenges and preservation of agro-ecosystems; Food for the future and Food quality**

**(Moderator & Rapporteur : Pr. Mohamed FARISSI)**

- **10.00-10.10 : TONJOCK Rosemary Kinge (Faculty of Science, The University of Bamenda, Cameroon)**  
Conservation of Mushrooms for Food Security and Their Ethnomycological Knowledge in the South and North West Regions of Cameroon
- **10.10-10.20 : BAROUD Saïd\*, TAHROUCH Saida, HATIMI Abdelhakim (Faculté des sciences Agadir, UIZ, Morocco).**  
Effet de trois algues brunes sur la croissance, le rendement et la qualité de fruit de la tomate (*Solanum lycopersicum*).
- **10.20-10.30: HOUNSOU-DINDIN Guillaume (Faculté des Sciences Agronomiques, Université d'Abomey-Calavi, Benin)**  
Diversity and Prioritization of useful wild oil plants for valorization in Benin: A multi-criteria analysis approach
- **10.30-10.40: HOUMY N\*<sup>1,4</sup>, BELHAJ K<sup>1</sup>, MELHAOUI R<sup>1</sup>, SINDIC M<sup>2</sup>, RICHEL A<sup>3</sup>, ELAMRANI A<sup>1</sup> (Faculté des Sciences, University of Mohammed Premier, Oujda Morocco 1. Gembloux Agro Bio Tech, University of Liège, Gembloux, Belgium 2-3; , Centre Régional de Recherche Agronomique 4, Morocco)**  
Chemical characterization of almond meal as a by-product of the mechanical extraction of almond oil
- **10.40- 10.50 : KODAD Souhayla\*, MELHAOUI Reda, ADDI Mohamed, ELAMRANI Ahmed, SERGHINI Hana, ABID Malika, MIHAMOU Aatika (Faculté des sciences Université Mohammed Premier Oujda, Morocco)**  
Micropropagation of promising almond genetic resources based on oxidative stability of edible seed oils
- **10.50-11.00: MOUJAOUI Nabil, HARIRI El Bachir et ELHOUMAIZI MohammedAziz (Faculté des sciences Université Mohammed Premier Oujda, Morocco)**  
Le palmier dattier de la palmeraie de figuig : état phytosanitaire.
- **11.00-11.10 : Belhaj Kamal<sup>(1,2\*)</sup>, Yassin Taaifi<sup>(1)</sup>, Mansouri Farid<sup>(1)</sup>, Sindic Marianne<sup>(2)</sup>, Boukharta Mohamed<sup>(4)</sup>, Serghini Caid Hana<sup>(1)</sup>, Elamrani Ahmed<sup>(1)</sup> (Faculté des Sciences, University of Mohammed Premier, Oujda Morocco 1. Gembloux Agro Bio Tech, University of Liège, Gembloux, Belgium 2-3; Institute of Agricultural Industries, High school of Charlemagne 4, Belgium)**  
Effect of rearing season on the sheep meat quality traits of Beni-Guil breed from the highlands of Morocco
- **11.10-11.20: Aimen EL ORCHE<sup>1</sup>, Mustapha BOUATIA<sup>2</sup> and Mohamed MBARKI<sup>1</sup> (Faculty of Science and Technology, Sultan Moulay Slimane University, Beni-Mellal<sup>1</sup>, Faculty of Medicine and Pharmacy, Mohammed V University of Rabat 2, Morocco)**  
Sustainable analytical chemistry to monitoring food quality, Moroccan olive oil.
- **11.20-11.30: Maryem ISMAILI<sup>1</sup>, Tarik BENABDELOUHAB<sup>3</sup>, Samira KRIMI<sup>1</sup>, Mustapha NAMOUS<sup>1</sup>, Abdelghani BOUDHAR<sup>2</sup>, Youssef LEBRINI<sup>2</sup>, Abdelaziz HTITIOU<sup>2</sup>, Hasna EL OUDI<sup>1</sup>, Fatima ABOUTAIB<sup>1</sup> (Faculté Polydisciplinaire, Université Sultan MoUlay Slimane 1; Faculté des sciences et techniques Faculté des sciences et techniques<sup>2</sup>, Morocco)**  
The use of the phenological parameter and multi-criteria analysis for the elaboration of the soil suitability map in the Khouribga region.
- **11.30-11.40 : Ayman LOUALI<sup>1</sup> Rachid MENTAGUE<sup>2</sup> and Slimane Khayi<sup>2</sup> (Faculty of Science and Technology, Sultane Moulay Slimane University 1, INRA Rabat 2, Morocco)**  
Isolement, caractérisation biochimique et moléculaire des rhizobactéries associées à l'arganier (*Argania spinosa* L.)
- **11.40-11.50: Abdellatif Boutagayout<sup>1,2</sup>, Saadia Belmalha<sup>2</sup>, Laila Nassiri<sup>1</sup>, El Houssine Bouiamrine<sup>1</sup> (Université Moulay Ismail, Faculté des Sciences<sup>1</sup>; ENA de Meknes, Morocco).**  
Mulching effect on weed control and faba bean (*Vicia faba* L. Minor) yield in Meknes region, Morocco.
- **11.50-12.00: OUA KHSSASE Abdallah<sup>1</sup>, Noureddine FATINI<sup>2</sup>, Elhabib AIT ADDIA<sup>1</sup> (Ecole Supérieure de Technologie d'Agadir, B.P: 33/S, Université Ibn Zohr, Agadir 1; b Laboratoire Marocain de l'Agriculture (LABOMAG, Bureau Veritas) Casablanca, Morocco)**  
Determination of Aflatoxins (AFB<sub>1</sub>, AFB<sub>2</sub>, AFG<sub>1</sub> and AFG<sub>2</sub>) in Almonds by Ultra Performance Liquid Chromatography Tandem Mass Spectrometry (UPLC-MS/MS)
- **12.00-12.10: Youssef Khachtib, Said Bouda, Youssef ait bella, Anas el khabli, & Abdelmajid Haddioui (Faculty of Sciences and Techniques, Sultan Moulay Slimane University, Beni Mellal, Morocco)**  
Assessment of diversity of cultivated apple (*Malus domestica* Borkh) in Morocco by pomological traits
- **12.10-12.20: BOUHADI Mohammed<sup>1</sup>, AINANE Ayoub<sup>1</sup>, EL KOUALI M'hammed<sup>1</sup>, TALBI Mohammed<sup>1</sup>, AINANE Tarik<sup>2</sup>**  
Accumulation De Chrome Et leurs Effets Sur La Croissance, Les Paramètres Physiologiques Et Biochimiques Du Radis (*Raphanus Sativus* L.)

**Discussion**

*6th Session: Socio-economic and environmental risks (Climate change, Drought, flooding, health pandemic crisis-COVID19...) and impact on natural resources and sustainable development*

**(Moderator & Rapporteur: Pr Mohammed ZERIOUH)**

- **10.00-10.10: BADRE Abdeslam (Mohamed V University, Morocco)**  
Mitigating the consequences of <sup>[1]</sup><sub>SEP</sub> environmentally-induced migration in North Africa
- **10.10-10.20: EL AZZAOUI Mohammad and MACHOURI Nadia (Faculty of Letters and Human Sciences - M5U Rabat, Morocco)** Study of the state of the art of research on Draa concerning water, agriculture and environment
- **10.20-10.30: TSHEGOFATSO Molefe and INGLESILLOTZ Roula (University of Pretoria, South Africa).**  
Examining the Energy - Water-Food nexus through an SDG lens for the Big 5 African countries
- **10.30-10.40: 11.50-12.00: Tarik Lakhhal (Faculté des Sciences Juridiques, Economiques et Sociales - Agdal UMV de Rabat, Morocco)**  
Quel impact des prix agricoles sur le changement climatique ?
- **10.40- 10.50 : Imane SEKMOUDI 1, Kenza KHOMSI 2, Laila IDRISSE 1 ( Faculty of Sciences and Technologies, Mohammedia Hassan II University, Casablanca 1; Direction of National Meteorology, Casablanca 2, Morocco)**  
COVID19 lockdown improves air quality in Morocco

- **10.50- 11.00 : CHERKAOUI S. Imad<sup>1</sup>, BOUKHROUK M<sup>2</sup>& LAKHAL Tarik<sup>3</sup> (Higher School of technology of Khenifra, Sultan Mly Slimane University<sup>1</sup>; Higher School of technology of Essaouira, Cadi Ayyad University Marrakech<sup>2</sup>; Faculté des Sciences Juridiques, Economiques et Sociales Agdal Université Mohammed V de Rabat<sup>3</sup>, Morocco)**  
Conservation Amid COVID-19 Pandemic: Ecotourism Collapse Threatens Communities and Wildlife in Morocco
- **11.00- 11.10: Chioma Daisy ONYIGE (Faculty of Social Sciences, University of Port Harcourt, Port Harcourt, Nigeria)**  
The climate change and human trafficking nexus

**Discussion**



**7th Session: Natural and applied sciences based solutions to environmental issues (Climate change, pollution and natural resources degradation)/evaluation of the state of the natural resources**

**(Moderator & Rapporteur : Pr. Temitope O. SOGBANMU)**

- **10.00-10.10: Abdelghani BOUSSETTA1 , Anass AIT BENHAMOU1, 2, Mouhamed BOUHA 1 Mohammed EL IDRISII and Amine MOUBARIK1 (FP Béni Mellal/USMS1, FS Semlalia, UCA, Marrakech 2, Morocco)**

The potential contribution of bio-adhesives to climate change: development of sustainable lignin based adhesives for engineered particleboard with low formaldehyde emission

- **10.10-10.20 : LAKRIKH Siham, LAALLAM Latifa, JOUAITI Ahmed (Faculty of Sciences and Technologies, Sultan Moulay Slimane University, Beni Mellal, Morocco)**

Electronic and photoelectronic properties of 2- (aryl) - 2- (7 (4) - (arylsulfonyl) oxime-1-ethyl-1H-indazol-4-ylidene) acetonitrile molecules: DFT / TD-DFT study

- **10.20-10.30: LEBRAHIMI Habiba and Mohamed FEKHAOUI (Scientific Institute of Rabat, UM5, Morocco )**

The fluorine in water, soil and vegetation in the region of khouribga (Morocco).

- **10.30-10.40: Youness ACHOUR (FST Béni Mellal/USMS, Morocco)**

Insight into Adsorption mechanism of Congo red onto Bombax Buonopozense bark Activated-carbon using Central composite design and DFT studies

- **10.40-10.50: Hayat EL Ouafy<sup>1</sup>, Tarik EL Ouafy<sup>2</sup>, Mohamed Mbarki<sup>1</sup>, Mustapha Oubenali<sup>1</sup>, Malika Echajia<sup>1</sup>, Mohammed EL Idrissi<sup>3</sup>, Aziz EL Haimouti<sup>2</sup> (FST Beni Mellal<sup>1</sup>. PF Khouribga<sup>2</sup>, FP Benimella<sup>3</sup>, Sultan Moulay Slimane University, Morocco)**

Electrochemical analysis of mercury (II) in the water of the Oum Erbie river using a sensitive clay-based electrode

- **10.50-11.00: Ekeoseye, E. O. 1, Sogbanmu, T. O. 1 and Saliu, J. K. 1 ((1) Faculty of Science, University of Lagos, Akoka, Lagos, Nigeria )**

Fisheries Diversity, Macro- and Microplastic Distribution in Surface Water, Sediment, Macrobenthos and Fish Species of the Lagos lagoon, Nigeria

- **11.00-11.10: H. MOKADEM 1, M. BENCHACHO 1, L. EL YOUSSEFI 2 A. ABOUABDILLAH 3 (Faculté des Sciences Kenitra, UIT 1, EST Khenifra, USMS 2, ENA de Meknes<sup>3</sup>, Morocco)**

Groundwater nitrates contamination in intensive agriculture in Gharb and Loukkos regions North West of Morocco

- **11.10-11.20: A. EL BERKAOUI<sup>1, 2</sup>, AIT ALLA A<sup>2</sup>., MOUKRIM A. 2, MIRI M. 1, 2, EL FILALI F., 1, HANOUNE S. 1, BOUM'HANDI N. 1 (National Research Institute of Marine Fisheries (INRH), Seafood Processing and Technology Center (CSVTPM), BP: 1050, Agadir<sup>1</sup> University Ibn Zohr, Faculty of Sciences, Agadir, Morocco)**

Characterization of halophilic and halotolerant bacteria producing extracellular hydrolytic enzymes isolated from salt marshes in Morocco.

- **11.20-11.30: Sara DADAR<sup>1</sup>, Ayda NASIRI-KALAT<sup>2</sup>, Damira KEČEK<sup>3</sup>, Dragana DOGANČIĆ<sup>4</sup>, Bojan ĐURIN<sup>3</sup>, Nikola KRANJČIĆ<sup>4</sup> (Ferdowsi University of Mashhad, Mashhad, Iran<sup>1</sup>; Khavaran Institute of Higher Education, Mashhad, Iran<sup>2</sup>. University North, Varaždin <sup>3</sup>; Faculty of Geotechnical Engineering, University of Zagreb, Varaždin <sup>4</sup>, Croatia)**

Multicriteria assessment of the phytoremediation at wastewater treatment plant by Macbeth method - case study Parkandabad, Iran

- **11.30-11.40: Ziat Younes 1, Hamza Belkhanchi 1 Maryama Hammi 2, Charaf Laghlimi 3, Abdelaziz Moutcine 3 ((1) EST Béni Mellal/USMS, (2) FS Rabat/UM V, (3) FST Béni Mellal/USMS, Morocco)**

Synthesis of N-CNT/TiO<sub>2</sub> composites thin films: surface analysis and opto-electronic properties

- **11.40-11.50: Maryama Hammi<sup>1,a</sup>, Younes Ziat<sup>2,b</sup>, Charaf Laghlimi<sup>3</sup> and Abdelaziz Moutcine<sup>3</sup> ((1) FS Rabat/UM V (3) EST Béni Mellal/USMS, , (3) FST Béni Mellal/USMS, Morocco)**

Investment casting of leaded brass: microstructure micro-hardness and corrosion protection by epoxy coating

- **11.50-12.00: Redouane MGHAIOUNI 1, 2, Mohammed SALAH 3, Mohamed MONKADE 2, Abdeslam EL BOUARI 1 (Faculty of Sciences-Ben M'sik, Hassan II University, Casablanca 1; Faculty of Sciences, Chouaib Doukkali University, El jadida<sup>2,3</sup>)**

A New knowledge of water magnetism phenomenon

- **12.00-12.10: Tarik EL Ouafy\*<sup>1</sup>, Hayat EL Ouafy<sup>2</sup>, Mohamed Mbarki<sup>2</sup>, Mustapha Oubenali<sup>2</sup>, Malika Echajia<sup>2</sup>, Aziz EL Haimouti<sup>1</sup>, Mohammed EL Idrissi<sup>3</sup> (Polydisciplinary Faculty, Khouribga, SMS university<sup>1</sup>; Faculty of Science and Technology, BeniMellal, SMS University<sup>2</sup>, Morocco).**

Electroanalytical method for the determination of Herbicide Diquat in tomato by modified carbon electrode.

**Discussion**