

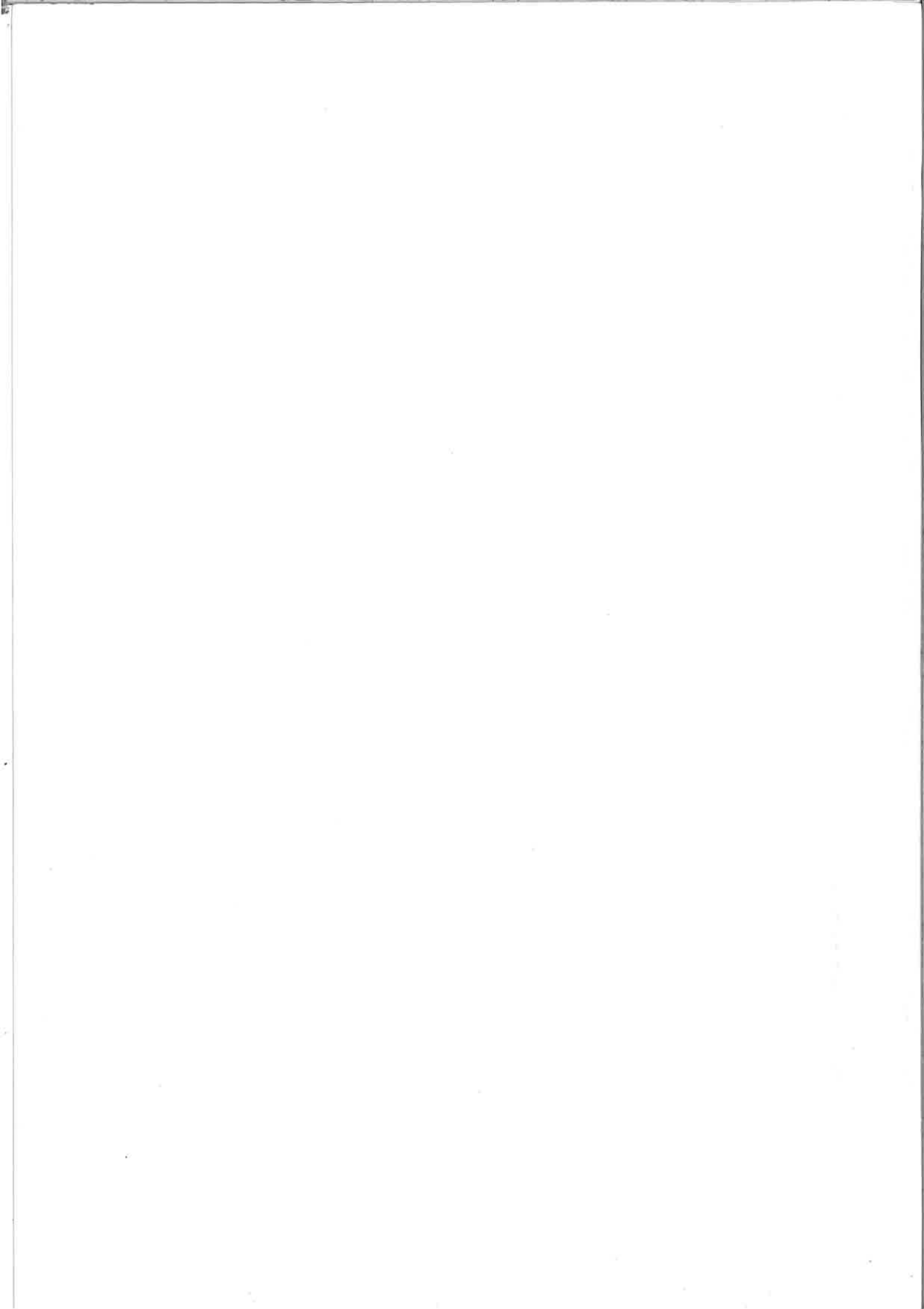


3rd INTERNATIONAL CONFERENCE ON
**GLOBAL WARMING:
FOOD SECURITY**
5-7 MAY 2015



CONFERENCE PROCEEDING

VENUE: Al Hamra Convention Center , Ras Al Khaimah , UAE





CONFERENCE PROCEEDINGS

3RD INTERNATIONAL CONFERENCE

GLOBAL WARMING: FOOD SECURITY

MAY 5-7, 2015

Environment Production & Development Authority (EPDA)
Government of Ras Al Khaimah
United Arab Emirates





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MESSAGE

It is with great contentment and privilege that we host the 3rd International Conference on "Global Warming: Food Security", during May 5-7, 2015 at Ras Al Khaimah, United Arab Emirates.



Global warming is already underway with consequences that must be faced today as well as tomorrow. Evidence of changes to the Earth's physical, chemical and biological processes is now apparent on every continent. With increasing impacts on agriculture, climate disruptions to agricultural production have increased in the past 40 years and are projected to further increase over the next 25 years. By mid-century and beyond, these impacts will be increasingly negative on most crops and livestock. Current loss and degradation of critical agricultural soil and water assets due to increasing extremes in precipitation will continue to challenge both rain fed and irrigated agriculture unless innovative conservation methods are implemented. To approach this goal in Ras Al Khaimah and the United Arab Emirates we encourage and support the use of technology in Global warming: Food security.

I look forward to this conference with a forum from regional and overseas experts to discuss and contribute their knowledge and the latest advancements towards finding the solutions desirable for the continued existence of our current and future generations.

I welcome all the delegates and participants to this conference and broaden my greetings and good wishes for the success of the conference.

H.H. Sheikh Saud Bin Saqr Al Qasimi
Supreme Council Member and Ruler of Ras Al Khaimah



CHAIRMAN'S MESSAGE

It is a matter of immense pleasure to organize the 3rd International Conference on "Global Warming: Food Security" under the patronage of His Highness Sheik Saud Bin Saqr Al Qasimi, Supreme Council Member of UAE and Ruler of Ras Al Khaimah, in Ras Al Khaimah, United Arab Emirates, during May 5-7, 2015.



To fully appreciate the urgency of Global Warming, it's important to understand the ways it affects society and the natural environment. Sea levels are rising and glaciers are shrinking; record high temperatures and severe rainstorms and droughts are becoming increasingly common. Changes in temperatures and rainfall patterns alter plant and animal behavior and have significant implications for humans. Agriculture has been able to adapt to recent changes in climate; however, increased innovation will be needed to ensure the rate of adaptation of agriculture and the associated socioeconomic system can keep pace with climate change over the next 25 years. Climate change effects on agriculture will have consequences for food security globally, through changes in crop yields and food prices and effects on food processing, storage, transportation, and retailing. Adaptation measures can help delay and reduce some of these impacts. So I look forward to this conference which will present an opportunity to discuss and contribute to our current knowledge on the issues of Global Warming on Food Security.

I am greeting all the delegates and other participants of this conference and articulate my good wishes for the accomplishment of the conference.

H.H. Sheikh Mohammed Bin Saud Bin Saqr Al Qasimi
Crown Prince of Ras Al Khaimah and Chairman of EPDA-RAK



WELCOME MESSAGE

It is with enormous pleasure that we are proud to be organizing the 3rd International Conference on "Global Warming: Food Security" under the patronage of His Highness Sheikh Saud Bin Saqr Al Qasimi, Supreme Council Member of UAE and Ruler of Ras Al Khaimah, in Ras Al Khaimah, United Arab Emirates, during May 5-7, 2015.



Global warming induced heat waves, droughts, and flooding constitute a global food security emergency for us all today

and remind us to protect our near and long term future food security- the world's top food producing regions are now highly vulnerable in the face of global warming & climate change. The negative impacts of climate change on crop and terrestrial food production have been more common than positive impacts, which are evident in some regions. Climate disruptions to agriculture have increased. Many regions will experience declines in crop and livestock production from increased stress due to weeds, diseases, insect pests and other climate change induced stresses.

The scientific program of the conference has been planned with an attempt to bring together regional and international experts and scholars to address the forefront issues associated with global warming and their solutions.

I take this occasion to articulate my gratitude to His Highness for His Patronage and support.

I, on behalf of EPDA-RAK, salute the distinguished guests and esteemed delegates wish to extend gratefulness to them for making this conference triumphant and enrich by their thought of deliberations.

Last but not least, I must thankfully acknowledged the continual effort, assistance and support of my office staff and colleagues in organizing this conference.

Dr. Saif Mohamed Al Ghais
Executive Director
EPDA-RAK

MESSAGE

Mr. Essa Al Ghurair serves as the Chairman of Al Ghurair Resources, a major supply chain provider and a key player in the field of agricultural commodities. Specializing in industrial manufacturing and commodities trading in international markets, combined with extensive experience has led Mr. Essa Al Ghurair to be a leading figure in industry circles. As Chairman of the Resources Division, he oversees the diverse business activities which include the manufacturing



and marketing of, edible oils and legumes; and in the trading of food grains, oils and meals. Under this leadership, Dubai Oil Mills – one of the largest crushing plants in the MENA region broke all previous grain trading records in a single year, topping the 5 million metric ton mark.

Essa Al Ghurair Investment LLC was founded in the year 2000 under the leadership of Mr Essa Abdullah Al Ghurair a member of the Al Ghurair Family which is one of the most prominent business groups in the United Arab Emirates, with a history of catering to the region for over 100 years.

FOODS: Manufacturing which will comprise mainly of Food related products namely:

- Edible Oil Plant
- Maize Mill Plant
- Coffee Roasting & Grinding Plant
- Flour Milling

REAL ESTATE

EGL is a pioneering real estate operation which develops and manages commercial, residential, hospitality and mixed use developments. For three decades, Project Development and Asset Management has been our stock in trade, catering to Dubai, Abu Dhabi and Ajman communities and business sector.

INVESTMENT & VENTURE CAPITAL

EGL will focus on credible investment and venture Capital that will focus mainly on IT industries across the world in line with its continuous endeavors to bring the latest technology and developments to the Region. EGL is also currently exploring investments in the Food sector using its leverage as experts in the food industry to expand to GCC and Mena Region.





BUSINESS DEVELOPMENT

Through a team of experts EGI is expanding its Business Development operations to open way for new and dynamic opportunities partnering with companies from across the world including Japan, Argentina, Brazil and Holland.

Mr. Al Ghurair graduated from the San Diego State University in California USA with Business Administration. He also holds the following main positions in the Group and its Joint ventures:

H.E. Essa Al Ghurair

Chairman - Al Ghurair Resources LLC;

Director - National Cement Co. PSC;

Chairman -Tharawat Advisory Board, Tharawat Family Business Forum;

Board Member - Dubai Chamber of Commerce & Industry.



MESSAGE

Learning from High Reliability Organizations in Leading for Food Security

High Reliability Organizations (HROs) are defined as organizations that "are able to manage and sustain almost error-free performance despite operating in hazardous conditions where the consequences of errors could be catastrophic" (Lekka, 2011, p. v). Examples of such organizations include aircraft carriers and nuclear-power-plants, places where failure can result in catastrophe. Studies of HROs suggest some very definable management and leadership practices that occur in such organizations, and these may provide some new directions for the leadership that will be required for food security and climate change. For HROs this means "mindful organizing" with a different relationship to anticipation and containment—looking for early signs of failure, resisting simplification in favor of the complexity of things, a sensitivity to operations, commitment to resilience, and deferring to frontline experts and expertise (Weick & Sutcliffe, 2007). Commitment to resilience includes both absorbing strain and returning to service, even during failures, and the ability to constantly learn from failing. The value of shifting decision making and managing authority gradients in HROs is also central (Roberts & Bea, 2011). This session will focus on a distinctive list of practices in leading in HROs, and provide an opportunity for session participants to discuss the application of these HRO practices for food security planning.



Keywords: Leadership, complexity

Joanne DeMark
Western Washington University





ENVIRONMENT PROTECTION AND DEVELOPMENT AUTHORITY (EPDA)

Ras Al Khaimah's Environment Protection and Development Authority (EPDA) was formerly known as the Environment Protection and Industrial Development Commission (EPIDC), originally established in 1999. In March 2007, EPIDC was restructured and renamed through Local Emiri Law No (2) of 2007.

EPDA is Ras Al Khaimah's nominated body (Competent Authority) responsible for implementing Federal Law No. 24 of 1999 for the Protection and Development of the Environment in collaboration with the UAE's Federal Environment Agency, Ministry of Environment and Water and other concerned parties and stakeholders at international, federal and local level.

EPDA main objectives are:

1. Protect and develop the environment of Ras Al Khaimah, from the negative impacts of activities that may cause damages to human health, agricultural crops, wildlife, marine life, other natural resources and climate by implementing necessary policies, plans and actions.
2. Promote the sustainable development of the Emirate and propose the necessary regulations to link environmental concerns to the planning and development policy of the entire Emirate, by coordinating between the Authority and different private and governmental organizations.

Important responsibilities of EPDA are:

1. Conduct scientific studies and researches related to natural resources, pollution, human settlement, industrial and economic development.
2. Suggest and offer projects, technical solutions, recommendations and contingency plans to issues related to environment for all the sectors of the Emirate.
3. Prepare laws, rules, regulations, systems and procedures. As well as in force and execute federal and local environment rules.
4. Inspect and evaluate industrial, agriculture, economic developmental projects that have direct and indirect effect on the environment.
5. Establish a benchmark laboratory in the emirate for the purpose of scientific research & technologies.
6. Work in cooperation and coordination with official and non official organizations and institutions inside and outside the country.





3rd International Conference Global Warming: Food Security May 5-7, 2015

Organized by : Environment Protection & Development Authority, Ras Al Khaimah
Venue : Al Hamra Convention Center, Ras Al Khaimah, UAE

Monday May 4, 2015

9:00 PM Welcome Reception and Get-together

Day 1 - Tuesday May 5, 2015

9:00 - 10:45 AM

INAUGURAL SESSION

8:00 - 9:30 AM

Registration
Cultural Performance

9:30 - 10:45 AM

Welcome Speech

Dr. Saif M. Al Ghais, Executive Director, EPDA

Inaugural Speech

H.E. Essa Al Ghurair Chairman, Al Ghurair Resources LLC

Inaugural Address

Learning from High Reliability Organizations in Leading for Food Security
Prof. Joanne De Mark, Western Washington University, USA
Exhibition Opening

COFFEE BREAK
10:45- 11:00 AM

Session I

11:00 -13:00 PM

FOOD SECURITY

Chairman

Anwar Huq, Ph.D., FAAM,
University of Maryland

11:00 - 11:20 AM

Keynote :

World Natural Disasters and their Impact on the UAE Food Security: Future Perspectives.

Saif Al-Qaydi, Dean of College of Humanities and Social Sciences, UAEU

11:20 - 11:25 AM

Discussion

11:25 - 11:40 AM

Supply Chain of Food Security

Liza M. Gernal, Al Khawarizmi International College, Abu Dhabi

11:40 - 11:55 AM

Global and Local Analyses of Food Security

Sanjay Sethi, Signature Agri Ventures Ltd, Kenya.

11:55 - 12:10 PM

Emerging Techniques for Detecting and Characterizing Food- and Water-Borne Pathogens for Food Safety and Security

Salina Parveen, University of Maryland Eastern Shore, US





GLOBAL WARMING: FOOD SECURITY

3rd International Conference, Ras Al Khaimah, UAE

12:10 – 12:25 PM	Action Plans to Overcome the Impact of Climate Change On Biodiversity and Food Security in Sudan Rashied S Modawi Al Neelain, University Khartoum, Sudan
12:25 – 12:40 PM	Food security enhancement and sustainable use of natural resources in the Arabian Peninsula Ouled Belgacem, International Center for Agricultural Research in Dry Area, Arabian Peninsula Regional Program, Dubai, UAE
12:40 – 13:00 PM	Discussion

PRAYER & LUNCH BREAK
13:00 – 14:30 PM

Session II
14:30 – 16:35 PM

SOIL AND WATER MANAGEMENT

Chairman	Saif Al-Qaydi, Dean of College of Humanities and Social Sciences, UAE
14:30 – 14:45 PM	Water Resources Management in Abu Dhabi Under Climate Change Mohamed Mostafa A. Mohamed Department of Civil & Environmental Engineering, UAEU
14:45 – 15:00 PM	A Next Generation of Responsible Social Change Leaders for Climate Change Joanne De Mark, Western Washington University
15:00 – 15:15 PM	Influence of climate conditions variations on physiochemical properties of ground-water in Wadi Al Bih area of Ras Al Khaimah, UAE Ahmed Ali Murad, College of Science, UAEU
15:15 – 15:30 PM	The Challenges of Climate Change and Food Security in the United Arab Emirates (UAE): Critical Review for the Influence of UV-B Radiation with Future Research Perspectives Rahaf Moutaz-Billah Ajaj, UAEU
15:30 – 15:45 PM	Decision Support System for Optimal Water Management under Scarcity Tarek Merabtene, Dept. of Civil and Env. Eng., University of Sharjah
15:45 – 16:00 PM	Geospatial Technology for sustainable soil and water management Hussein Harahsheh, Global Scan Technologies LLC.
16:00 – 16:15 PM	Organic Farming and organic food production Mohamed A. Badawi, General Emirates Environmental Solutions Emirates Bio Fertilizer Factory Al Ain
16:15 – 16:35 PM	Discussion

PRAYER & COFFEE BREAK
16:35 PM Onwards
End of 1st Day Program





Day 2, Wednesday May 6, 2015

7:30 – 9:00 AM Registration

Session I

9:00 – 10:55 AM

FOOD TECHNOLOGY

Chairman	Salina Parveen, University of Maryland Eastern Shore, US
9:00 – 9:20 AM	Keynote We refuse "a future with thirst and hunger" Raul Kalinsky, INDEI, Salta Argentina, CONSULTORA ANDINA SRL, Argentina
9:20 – 9:30 AM	Discussion
9:30 – 9:45 AM	Integrating Genomic and Proteomic Efforts in Date Palm Research Muhammad Mukhtar, American University of Ras Al Khaimah
9:45 – 10:00 AM	Evaluation of metals that are potentially toxic to agricultural surface soils, using statistical analysis, in north-western Saudi Arabia Yousef Nazzal, Abu Dhabi University
10:00 – 10:15 AM	Nanotechnology and its Applications in Modern Agriculture, Renewable Energy, and CO ₂ Capture Irshad Ahmad, Irshad Ahmad, Department of Mathematics and Natural Sciences, American University of Ras Al Khaimah, Ras Al Khaimah, UAE
10:15 – 10:30 AM	Seed germination of Potential native plants for oil production in the United Arab Emirates Sanjay Gairola, Sharjah Seed Bank & Herbarium Laboratory Sharjah Research Academy
10:30 – 10:45 AM	Application of Genomics to Improve Seed Isoflavones Contents in Soybean Abdelmajid Kassem, Department of Biotechnology, American University of Ras Al Khaimah
10:45 – 10:55 AM	Discussion

COFFEE BREAK

10:55 – 11:15 AM

Session II

11:15 – 13:00 PM

FISHERIES AND AQUACULTURE

Chairman	Eihab M. Fathelrahman, College of Food and Agriculture UAE University
11:15 – 11:35 AM	Keynote A Threshold of 5°C Above Normal and Global Warming: How Can it Impact Seafood? Anwar Huq, Ph.D., FAAM, University of Maryland
11:35 – 11:40 AM	Discussion
11:40 – 11:55 AM	Economic Impacts of United Arab Emirates (UAE) Fisheries Sector Sustainable Practices Investments Eihab M. Fathelrahman, College of Food and Agriculture UAE University





GLOBAL WARMING: FOOD SECURITY

3rd International Conference, Ras Al Khaimah, U.A.E.

11:55 – 12:10 PM	Global Warming: Impact on Fisheries and Aquaculture – A Threat to Food Security B. Madhusoodana Kurup, Vice Chancellor, Kerala University of Fisheries and Ocean Studies, India
12:10 – 12:25 PM	Response of the Asian Sea Bass Lates Calcarifer Fingerlings to Different Feeding Rates and Feeding Frequencies Reared in Hyper Saline Condition Adnan Jameel Salama, Vice-Dean for Faculties Branches Faculty of Marine Science King Abdulaziz University, Saudi Arabia
12:25 – 12:40 PM	Global Warming: A potential Threat to Fish Resources Najam Khurshid, Technical Director, Global Environmental Management Services , RAK
12:40 – 13:00 PM	Discussion

PRAYER & LUNCH BREAK 13:00 – 14:30 PM

Session III
14:30 – 15:00 PM

POSTER SESSION

16:00 PM – 23:00PM

Sightseeing- Dubai

End of 2nd Day Program

Day 3, Thursday May 7, 2015

8:00 – 9:00 AM

Registration

Session I
9:00 – 10:45 AM

POLLUTION AND SOURCES

Chairman	Joanne De Mark, Western Washington University,
9:00 – 9:15 AM	Long Term Impacts of Global Warming and Coastal Effluents on the Future of Desalination Technologies in the Arabian Gulf Countries Walid Elshorbagy, Civil and Environmental Engineering Dept., United Arab Emirates University
9:15 – 9:30 AM	Impact of Climate Change on Long Term Rainfall Trend in UAE and Future Challenges: A Case Study of Sharjah Airport Data Mohsin Siddique, University of Sharjah
9:30 – 9:45 AM	Socio-Economic Impacts of Marine Oil Spills on Arabian Gulf Populations Ismail M.K., Saadoun Assistant Dean, College of Sciences University of Sharjah
9:45 – 10:00 AM	Tim Niemier From Kayak Designs to a clean world profitable
10:00 – 10:15 AM	Increasing food availability, reducing food footprint – an assessment Sophy Thomson, Sophy Thomson, Higher Colleges of Technology – Sharjah Women's college
10:15 – 10:30 AM	Paradoxical Relationship between Food Supplies and Environmental Degradation Muhammad Akhtar Abdul Hai, Applied Economic Research Centre, University of Karachi, Pakistan
10:30 – 10:40 AM	Discussion

COFFEE BREAK 10:40 – 11:10 AM

CLOSING SESSION 11:10 – 12:30 PM

PRAYER & LUNCH BREAK

End of 3rd Day Program





KEYNOTE SPEAKERS





KEYNOTE SPEAKER

Prof. Saif Al-Qaydi

The Dean of College of Humanities and Social Sciences

United Arab Emirates University



Prof. Saif Al-Qaydi is the Dean of College of Humanities and Social Sciences. He held several academic and scientific positions as chair of the Geography and Urban Planning department and Assistant dean for student affairs. He completed a post-doc in GIS and RS from Clark University, 1994. He was a team leader to review the exhibits content for Sheikh Zayed Desert Learning Center, as part of Al Ain Zoo project (2011-2013). He was member of Abu Dhabi High Committee in Geographical Names to the Abu Dhabi roads and streets naming project (2012-2014). He was involved in several program and project review e.g. UAEU MSc in Environmental Sciences (Env Sci) Program Review Panel, 2014. He was visitor at several Universities e.g. Sydney, 2008, George Washington 1997 and 2006, Durham University, 2005, Georgetown 2001/2002. He was the Vice-Chairman of the Arab Division on Arab Geographical Names, Part of the UN Expertise Team (UNGEGN) and the UAE representative, 2004-2012. He was and still is a member of the editorial board for several journals, e.g. (IWRA, 2004-2007) scientific board of the Scientific Journal International (SJI, since 2006), The Gulf Geographical Journal, and GCC Society (since 2005).





KEYNOTE SPEAKER

Prof. Joanne F DeMark PhD
Leadership Development Specialist,
Western's Leadership Advantage,
Western Washington University,
Trainer, Facilitator - Matrix Leadership Institute,
Associate and Consultant - NCBI International,



Joanne DeMark, Ph.D., works at Western Washington University as a Leadership Development Specialist, directing the LEADS student leadership program on a day-to-day basis. She also teaches Leadership Studies and American Cultural Studies. Her research interests include leadership for social change, high impact practices to develop student leaders, leadership for a multicultural world, and mindfulness and creativity for sustainable organizations. Dr. DeMark came to Western Washington University after successful tenures as a co-founder and co-administrator of a 16-year leadership development and prejudice reduction non-profit, a decade as a human resource development executive in a healthcare software and services firm, and 15 years as an assistant management professor, adjunct, in the Health Policy and Management Masters program at Emory University's Rollins School of Public Health, the Woodruff Health Sciences Center. Dr. DeMark has consulted to dozens of organizations across the United States focusing on leadership, team and organizational development, communication skills, conflict resolution, and cross-culturally competent leadership. As a non-profit co-administer, Dr. DeMark helped her organization obtain funding from the Kellogg Foundation, the Community Foundation for Greater Atlanta, the Arthur Blank Foundation, and the United Way among others. During her work in healthcare software and services, Dr. DeMark managed a direct budget of 6 million dollars and managed 23 employees. She helped implement a performance management system and a leadership curriculum in a post-merger environment that resulted in smoothing the transition of three company cultures into one; she received awards for her work. Dr. DeMark obtained her Ph.D. in an APA-approved program in Counseling Psychology from the University of Florida.





KEYNOTE SPEAKER

Prof. Anwar Huq, M. S., Ph.D., FAAM
Maryland Pathogen Research Institute and
Maryland Institute for Applied Environmental Health
University of Maryland, USA



Dr. Anwar Huq received B.S. in Zoology, Masters in Marine Biology from the University of Karachi in 1973 and Ph. D. in Microbiology from the University of Maryland at College Park (UMCP), Maryland in 1984. Dr. Huq began his carrier at the Cholera Research Laboratory in 1974, and subsequently, at the International Center for Diarrheal Disease Research, Bangladesh (ICDDR,B), in Dhaka, Bangladesh as a Research Officer and subsequently as a Scientist and also served as Head of Microbiology Branch, 1984-89. In 1989, Dr. Huq joined the Department of Microbiology, UMCP as Assistant Professor prior moving to the Center of Marine Biotechnology (COMB), University of Maryland Biotechnology Institute (UMBI) at Baltimore, as Associate Professor in 1997. In 2007, Dr. Huq joined the Maryland Pathogen Research Institute (MPRI) where he is currently a Professor and also an Affiliate Professor, Maryland Institute for Applied Environmental Health, School of Public Health, University of Maryland College Park, Maryland. Dr. Huq is a Fellow of the American Academy of Microbiology (FAAM) since 1999, and has served as Director of the University of Maryland-UNESCO Microbiology Resource Center (MIRCEN) 1999-2005.

Dr. Huq's research interest includes understanding of pathogens primarily focusing on waterborne pathogens aiming disease intervention and prevention. Bacterial pathogens occurring naturally in the environment cannot be eradicated. Moreover, with global climate change, significant impact is expected to take place on many of these pathogens. His work on the ecology, survival, transmission and detection of *V. cholerae* for prediction and prevention of the disease cholera employing conventional microbiological, immunological and molecular methods, and bioinformatics along with oceanography, limnology and satellite remote sensing has been rewarding. Dr. Huq has also worked extensively on safe drinking water. His work on sari filtration for safe drinking water has proven to save lives and sufferings in Bangladesh. Dr. Huq has published over 200 papers in peer-reviewed journals, books and proceedings, and presented over 100 invited talks around the world.





KEYNOTE SPEAKER

Arq. Raúl Kalinsky
Raul Kalinsky, Architect, Argentina
INDEI, Salta Argentina
CONSULTORA ANDINA SRL, Argentina



Architect, working from its beginnings in 1973 as a technical consultant on issues related to the development of regional, provincial and national levels. It was impeller and member of national and international institutions, non-profit, dedicated to the training of municipal officials and the exchange of experiences between cities.

He was Secretary of Public Works and Services of the City of Buenos Aires. He promoted in 1989 the original idea of the creation of the Corporation Antiguo Puerto Madero. He was Chief of Cabinet Municipality of Salta, Argentina.

He bring many conferences, workshops and other activities all around the globe. About gubernamental, environmental and depelop issues.

A nationwide participated in the Municipal Development Program Federal Investment Council (IFC); created the Institute of Municipal Action (IAM) within the Foundation for Contemporary Studies (FUNDECO) was Vice President of the Foundation of the Bank of the City of Buenos Aires. He was Director of South America of the Inter-American Foundation City and cooperates with the United States Conference of Mayors.





ABSTRACTS





World Natural Disasters and their Impact on the UAE Food Security : Future Perspectives

Prof. Saif Al-Qaydi

Dean of College of Humanities and Social Sciences, UAE University

ABSTRACT

Food security is one of the crucial issues profoundly affecting many countries around the world. Producing high quality food in a large volume and with reasonable prices is not an easy task to many nations due to population growth and other related factors. Within this context, the UAE population has drastically increased from 1.5 million at the beginning of the 1980s to more than 8.5 million in 2014 intensifying pressures on food production in the country. The multi-cultural diversity of the UAE population besides the multiplicity of their eating habits and standards of living have left their imminent impact on the quality and quantity of food consumption in the country. Taking into consideration the world farm season variations as well as other related global issues, the UAE was able to import all kinds of food products throughout the year. Nevertheless, several obstacles have confronted food security in the UAE mostly contingent upon imports. Integral to these obstacles are potential world natural disasters striking different countries all over the world. For example when the farmlands in rice producing countries such as Pakistan or Vietnam were devastated by natural disasters such as floods or tsunamis, the volume of rice import to the UAE markets will be greatly reduced. Ostensibly, rice, wheat, cereals in general and meat are among the basic commodities imported by the UAE food markets. In response to such contingencies, the UAE government has developed new food policies including the production of food from its own land and growing farm crops in rented farmlands in addition to constructing cooperation and strong relationships with major food producing countries worldwide.





We refuse "a future with thirst and hunger"

Raul Kalinsky

Architect, Argentina

INDEI, Salta Argentina

CONSULTORA ANDINA SRL, Argentina

ABSTRACT

Global warming is a big problem, but not the only one. Twenty-five years from now we will live in a different balance of land, sea and potable water. What problem could be similar or even worse?

The loss of quantity, quality and decision-making about food caused by the use of GMO hybrid seeds comes to mind. Also one thinks of the use of harvested food for animal alimentation.

The low level of consciousness of many of our economic, political and business leaders is at the core of the trouble, not only selfishness and ambition, but hubris and willful innovation. We must stop the decrease of local natural seeds and genetic material in farming. We must seek governmental subsidy if it is required to sustain our natural seed diversity. And will we resist human reproduction falling into the hands of international companies outside the control of the public, to control population growth and genetic variability/homogeneity?

If we, as a human community, including our leaders, cannot increase our level of consciousness, conditions will remain the same or worsen. Nothing will change if we all don't change ourselves. We must increase corporate social responsibility with conscious leadership that holds businesses and governments accountable for both short and long term impacts. We need to create a genetic vegetal and animal reserve, like a Noah's ark, with "survival biology material" in society's hands, not just corporate domain.

What we consider possible is what defines what we can do.





A Threshold of 5°C Above Normal and Global Warming: How Can it Impact Seafood?

Prof. Anwar Huq

Maryland Pathogen Research Institute,
University of Maryland, College Park, MD, USA

ABSTRACT

Vibrios are autochthonous to aquatic environment and some are responsible for seafood associated diseases primarily gastroenteritis. Infection caused by *Vibrio parahaemolyticus* is the leading cause of seafood associated illness usually arising from consumption of raw or undercooked seafood. *V. vulnificus* with case fatality over 50% in case of septicemia, can also cause gastroenteritis from consuming of raw or undercooked seafood. Occurrence of these organisms has been implicated directly with water temperature. Areas having 5°C rise above normal temperature had up to 3x increase of *V. cholerae* in water observed in different geographical locations. Harvesting seafood, particularly shrimp and crabs from those areas pose a risk of causing disease as crustaceans are known to host vibrios. In addition, vibrios enter into nonculturable state at low temperature, maintaining its pathogenicity and viability without growing on bacteriological plates. Because of global warming, unusual fall of temperature has been observed in certain areas. It is important to detect the organisms by using appropriate method for the diagnosis as well as prevention of the disease. Therefore, predicted increase of temperature due to global warming potentially poses a direct threat to public health associated to aquaculture industry. To protect people from getting disease or prevent an epidemic, it is important to assure food is not contaminated with infectious vibrios for which an active monitoring system must be established with appropriate methods for detection, especially seafood producing countries.





Supply Chain of Food Security

Liza M. Germal, DM

Ahmed Saeed Almansouri

Al Khawarizmi International College

ABSTRACT

Climate change, population growth, and high-energy prices mean that many experts worry farmers will struggle over the next generation to produce enough food for everyone. Over the past two years, academics have started turning attention to the connections between food waste and food insecurity. They are acknowledging that globally, forty percent of food is wasted and that this limits the amount of food available to feed a ballooning population (expected to rise to nine billion by 2050). Interestingly, this acknowledgement provides a robust counter-argument to the common tirade touted by agri-business—that genetic engineering and agricultural intensification is the only option to serve future food needs. Instead, this new research indicates that the puzzle of adequate food production has long been solved. This research will propose for first, using of science and technology to predict the weather; second, distribution channels will be clear and sound for food storage; third, local food production system; and fourth, regulation in the government to impose hand-to-mouth buying. This is according to need rather than in the quantities that are most economical. Circumstances in which this policy might be adopted where prices are falling or where a change in design is imminent and it is desirable to avoid large stocks.





Global and Local Analyses of Food Security

Sanjay Sethi

Managing Director & CEO
Signature Agri Ventures Ltd., Kenya

ABSTRACT

Every decade, world has been able to reduce the number of under nourished people by about 100 million and about 800 million are still in the vulnerable condition. Sub-Saharan Africa has the highest prevalence of undernourishment, around one in four people in the region remains undernourished.

Sustained political commitment at the highest level is a prerequisite for hunger eradication. It entails placing food security and nutrition at the top of the political agenda and creating an enabling environment for improving food security and nutrition through adequate investments, better policies, legal frameworks, stakeholder participation and a strong evidence base. Institutional reforms are also needed to promote and sustain progress. Hunger reduction requires an integrated approach, which would include: public and private investments to raise agricultural productivity; better access to inputs, land, services, technologies and markets; measures to promote rural development; social protection for the most vulnerable, including strengthening their resilience to conflicts and natural disasters; and specific nutrition programs, especially to address micronutrient deficiencies in mothers and children under five.

For Middle Eastern countries to ensure their long term food security, Africa offers a great opportunity which has 60% of world arable not under cultivation. Private sector must come forward, with support from the government to invest in select Sub Saharan countries to develop the agriculture. This will be the most viable amongst many other solutions to ensure food for additional 3 Billion people on the planet for the next 50 years and beyond.





Emerging Techniques for Detecting and Characterizing Food- and Water-Borne Pathogens for Food Safety and Security

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ABSTRACT

Global warming can be implicated with the incidence of food safety hazards caused by food- and water-borne pathogens at various stages of food chains, from primary production to consumption. Food- and water-borne pathogens are the leading cause of illness and death throughout the world, especially in developing countries. These pathogens are also responsible for millions of cases of gastrointestinal diseases each year in developed countries, costing billions of dollars in medical care and lost productivity. Therefore, rapid and sensitive detection for disease diagnosis and for tracking the source of food- and water-borne pathogens are critical to prevent and control pathogens from contaminating food during pre- and post-harvest processes. The goal of this presentation is to highlight the reasons for the increasing interest in rapid methods, current developments in the microbial detection and characterization, the data gap, and the future trends. Traditional culture-based methods are labor intensive, time consuming and most importantly may fail to provide accurate result. Rapid methods such as automated BAXPCR, Real-time PCR and GENE TRACK assays can be used for screening large number of samples. In addition, culture-independent metagenomic-based detection is gradually becoming popular that provides better understanding of the microbial community in food and in the food processing environments. Genome sequencing is applied to determine the source and pathogenic potential of food- and water-borne pathogens. Predictive models for specific pathogens in the environment can also be used by the food industry as a precaution for food safety and security.

Key Words: Global warming, food security, pathogens





Action Plans to Overcome the Impact of Climate Change On Biodiversity and Food Security in Sudan

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ABSTRACT

Sudan has a wide range of ecological zones extending from the barren deserts in the north to the rich savannah in the south. The biological diversity echoes this diversity of environments. The majority of the population of Sudan lives directly on these biological resources and the services generated thereof. Climate change is in the center of any threats facing biodiversity. The semi-arid nature of the environment makes Sudan vulnerable to the adverse impacts of climate change. The forest ecosystem and the grasslands of central and western Sudan that have been converted to rain-fed agriculture schemes are the most affected by the fluctuations in rain fall. Increasing rate of desertification, decreasing agricultural production, deteriorating environments of the rangelands and the growing populations depending on these resources intensified the effect of climate change. In such an environment conservation of biodiversity may seemingly conflicts with food security and the wellbeing of the rural communities. With this close link between biodiversity and food security, the equitable sharing of benefits from the use of biological resources and their services is a corner stone for conservation of biodiversity. The proposed actions are based on specified national targets that address the underlying causes of biodiversity loss, reduce the direct pressures on biodiversity and promote sustainable use. The necessary actions are tied to each of the national targets under the corresponding Aichi Target.

Key words: Biodiversity, Conservation, Climate change, Food security.





Food security enhancement and sustainable use of natural resources in the Arabian Peninsula

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ABSTRACT

The Arabian Peninsula (AP) which includes the six GCC countries and Yemen is characterized by extreme aridity and limited natural renewable resources in particularly water. It covers a vast landmass of about three million km² where most of the land is unsuitable for agriculture. It is also considered as one of the most vulnerable regions to climate change impacts. Due to these biophysical constraints and to other challenges related to global food crisis, food security is a major issue in the PA countries, especially the six GCC countries where almost 90% of the food consumed is imported.

In order to enhance the food security while conserving limited natural resources, ICARDA with full collaboration of the national research and extension systems (NARES) in all AP countries implemented since 1995 its regional program called Arabian Peninsula Regional Program (APRP).

The program includes three components: i) irrigated forages and rangelands; ii) protected agriculture and iii) in field water management. Six technology packages which addressed the region major constrains regarding agricultural development and natural resource management, were developed and transferred to farmers through technical backstopping. The adoption of the developed technologies increased land and water productivity at famer's fields.

The main outcomes of the program showed that the adopted technologies induced a significant improvement of water productivity for all crops. In Oman, the water productivity of Buffel grass, a native species domesticated and introduced by the Program, was 2.5 folds higher than the exotic Rhodes grass, widely used by farmers in the past. In UAE, the adoption of Buffel grass forage resulted into an average of USD 545 increase in the gross income /ha/year and each ton produced of dry matter saves about 850 m³ compared to Rhodes grass.





In the protected agriculture, both tomato and cucumber water productivities under soilless culture have increased by 7 and 9 folds respectively in UAE compared to the conventional soil culture. Furthermore, the adoption of Integrated Production and Protection Management (IPPM) has significantly reduced the use of hazardous agrochemicals.





Water Resources Management in Abu Dhabi Under Climate Change

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ABSTRACT

The main conventional source of freshwater in the Emirate of Abu Dhabi is Groundwater. Its share to the total freshwater supply in the Emirate is about 80%. Other unconventional sources of freshwater in the Emirate are desalination plants (17%) and treated wastewater reuse (3%). The current share of groundwater is estimated based on the estimated water demand in the Emirate and available production of the desalination plants. The sustainable yield of a groundwater aquifer, however, depends mainly on how fast this aquifer is replenished. Yet, the continuously increasing demand puts more pressure on this already scarce source and threatens its quality. Quantification of groundwater recharge is, therefore, a prerequisite for efficient and sustainable groundwater resources management; especially in arid regions. Consequently, groundwater recharge from the ephemeral Wadis and subsurface flow from mountainous valley beds play an important role in water management and planning. Although, both surface and groundwater resources in UAE are scarce; the anticipated climate change impacts could make these resources even scarcer. As such, the main aim of this paper is to assess the potential impacts of future climate variability and changes on groundwater recharge in the eastern region of UAE. Outcomes of this study will help to accurately estimate current and future sustainable extraction rates, assess groundwater availability, and identify pathways and velocity of groundwater flow. This will serve as an initial step towards assessing future impacts on water management in the Emirate.

Keywords: Water management, Groundwater recharge, climate change, UAE





A Next Generation of Responsible Social Change Leaders for Climate Change

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ABSTRACT

Will there be a next generation of leaders to continue to address the challenges of climate change and food security globally? The technical and field education from disciplines like environmental sciences, biology, agriculture and associated fields is absolutely essential. In addition, however, so are the abilities to lead in an increasingly complex, changing, and challenging world. Exploring whether college students have developed the capacities to lead social change is also essential. Western Washington University (WWU) participated in a U.S. study of college students; the purpose of the research was to examine college students' capacities for social change leadership (Higher Education Research Institute, 1996), as measured by the social responsibility leadership scale (SRLS) through the Multi-Institutional Study of Leadership (MSL) (Dugan, 2006). The results indicated that the WWU comparison sample, volunteer and paid student affairs paraprofessional student leaders and scholars, had significantly higher capacities compared to WWU and national random sample peers, and many other U.S. comparison sample student leaders. The study looks at these capacities: consciousness of self, congruence, commitment, collaboration, common purpose, controversy with civility, citizenship, and change. Four high impact leadership development practices may explain the difference in these students' capacities to lead social change. Qualitative data provides additional insights. This is important in that one of WWU's seven academic colleges is Huxley College of the Environment, one of the oldest U.S. environmental colleges and a recognized premier institution in producing the next generation of environmental experts and leaders.

Keywords: Leadership, Social Change, Youth

Works Cited

- Dugan, J. (2006). SRLS-Rev 2: The second revision of SRLS. College Park, MD, U.S.: National Clearinghouse for Leadership Programs.
- Higher Education Research Institute. (1996). A social change model of leadership development guidebook. Version III. Los Angeles, CA, U.S.: Higher Education Research Institute.





Influence of climate conditions variations on physiochemical properties of groundwater in Wadi Al Bih area of Ras Al Khaimah, United Arab Emirates (UAE)

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ABSTRACT

The planned status of groundwater for local security of different uses in drinking, irrigation, and industrial activities will probably support under rapid local and global climate variation and overflows periods. The study area, which is Wadi Al Bih and characterizes one of the biggest wadies in the northern Emirates, in the United Arab Emirates (UAE) may be affected by the climatic changes through the past ten years. This change was clearly realized in the climatic records through that period particularly temperature and rainfall values. To indicate the link between these climate parameters and its impact on the physiochemical characterization of groundwater aquifer, three water-sampling measurements have been done in 2005, 2011 and 2014 for determining the TDS (total dissolved solid), EC (electrical conductivity), temperature and pH values. The recoded concentrations specified change in TDS values which signifies the critical indicator of water freshening or salinization. However, this work critically revealed the effect of climate change on groundwater that obviously seemed in improving or depleting the salinity. These findings depend on the unpredictability of water flooding in the area by time for recharging the groundwater aquifer. Therefore, the change in the climate could be constructive when recharging the groundwater aquifer by adding new surface water quantities as a result of precipitation increase. Additionally, the necessity of periodical groundwater quality monitoring can help in facing the challenges of using and sustaining groundwater resources and mitigate the environmental risk in sight of understanding the dynamic relationship between groundwater and climate conditions.

Keywords: groundwater, rainfall, temperature, total dissolved solid, UAE





The Challenges of Climate Change and Food Security in the United Arab Emirates (UAE): Critical Review for the Influence of UV-B Radiation with Future Research Perspectives

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ABSTRACT

Climate change and food security became a severe pressing topic around the globe. During the last few decades, there has been a considerable attention from scientists, regulators, environmental agencies and even the public society about such burning topic. Climate change and global warming has become a real threat to the global food security. Its factors, manifested by elevated levels of temperatures, carbon dioxide (CO₂) and solar ultraviolet (UV-B) radiation, resulted in many significant adverse effects on the productivity of many agricultural crops, to adapt such new emerging conditions. The United Arab Emirates (UAE) is a country located in the arid region of the world, with severe environmental and climatological conditions. The enormous growth in the urbanization with the sharp growth in population are major sources, lead to further stresses on the agricultural sector, especially with the raising challenges of climate change and global warming. Thus, the future of food production sector in the country became in a real critical situation. Consequently, the main objective of this work is to shed light on the influence of the UV-B radiation, as one of the main factors of climate change, on the agricultural growth, performance and productivity. As well as, to highlight tailored solutions, that can rescue the future of food security in the UAE. Supported with, up-to-date research advancements and future research perspectives, representing the insights of the unified water sector strategy and implementation plan for the Gulf Corporation Council (2015–2035) that will assure the sustainability and food security in the country.

Keywords: food Security, global warming, ultraviolet (UV-B) radiation, United Arab Emirates (UAE).





Decision Support System for Optimal Water Management under Scarcity

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ABSTRACT

The present paper presents the development and application of a decision support system (DSS) for the operation and management of water systems under risk of water scarcity and water deficit. The objective is to develop a comprehensive system that can practically support decision makers to (1) simulate daily operational plans for selected drought alternatives (2) assess the performance of water supply systems for different supply-demand scenarios, and (3) propose alternative solutions based on a drought risk management concept. The current DSS consists of three main components, a user-friendly graphical user interface (GUI), a database manager, and water management models. The database manager module provides information on the water supply components, i.e., dam reservoirs, rivers water heads and purification stations, and perform some fundamental statistical analysis. The water models are the mathematical base of the DSS integrating (1) a conceptual rainfall-runoff analysis model that can be tailored and optimized using the Kalman filtering technique, (2) a water demand daily forecast model, (3) an operation model for the dam reservoirs, groundwater and other supply water sources, and (4) a drought risk assessment model. To evaluate the water supply alternatives from multi-sources water supply system, the methodology is based on genetic algorithm (GA). The DSS systematically links through the user-friendly GUI the hydrological database manager to the water models.

The developed DSS is applied to the optimal operation of an existing complex water supply system made of seven dam reservoirs, six water intake from rivers, groundwater sources and six purification stations. The system is currently operated to supply water for 2 million inhabitants and known to experience severe water stress and water deficits during drought. The results demonstrate the advantage of integrating water modeling into a DSS and the added value of using risk analysis and artificial intelligence as media of support in the operation of complex water supply system under drought scenarios.

Keywords: Decision support system, genetic algorithm, water scarcity





Geospatial Technology for sustainable soil and water management

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ABSTRACT

A perfect and long term food security should be essentially based on a sustainable agricultural system that use farming techniques and practices, which are designed in a way to protect the environment in additions to preserve the public health and protect the human communities. Under the preservation of the environment, it is very important to consider a sustainable farming that conserve soil, water and other natural resources.

In this paper we review the importance of soil and water management for a sustainable food production, we will present the role of geospatial technologies in soil and water management, and in particularly the use of satellite imagery, remote sensing techniques and Geographic Information System. Also there is a focus on the advanced and environmental friendly soil testing techniques, which use the technology of infrared remote sensing, the x-ray, hyperspectral analysis and others. As well we will review the role of Geographic Information System "GIS" as part of soil information system to manage and analyze and then help the farmer with the best practices, especially in terms of choosing the right fertilizer, the required quantity, the convenient time of farming, and many other benefits. There will be a discussion about controlling and monitoring the fields and make precision farming. A case study on soil mapping will be presented showing the use of satellite imagery and the GIS to establish a reliable soil database that planner can use for urban and agriculture planning, also we present an example of site selection for tourism development based on the environmental conditions including soil information.





Organic Farming And Organic Food Production

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ABSTRACT

In arid regions such as the Middle East are particularly vulnerable to food and water scarcity due to the severe climate, and the UAE is no exception, with 85 percent of food imported to meet local demand. As a result, the UAE is working to reduce waste, improve water conservation and farming techniques, and manage more sustainably the increasing demand for food and water being stimulated by the country's ongoing development. Organic farming program started since 1999, in UAE tending to provide healthy food and maintain sustainable agriculture.

Over the last century, population, market pressures and the development of new agricultural technologies have encouraged patterns of agricultural development tending towards agricultural intensification (i.e. increasing scales of monoculture production, intensive mechanical tillage, irrigation, and the use of synthetic fertilizer, pest control agents and a restricted diversity of crop and livestock varieties), often leading to natural resources degradation.

Organic Farming or Organic Agriculture is "a production system aim to building of soil fertility and avoiding the use of synthetic agricultural inputs and relies on ecological processes, such as waste recycling and where possible, agronomic, biological and mechanical methods, rather than the use of synthetic agricultural inputs (including fertilizers, pesticides, antibiotics, growth hormones and genetically-modified organisms) is common to all organic agriculture norms. The purpose of this form of agriculture is maximizing the health and productivity of not only the soil and plants, but also animals and other people.

On, 2013, there were 43.1 million hectares of organic agricultural land. Currently 164 nations have certified organic farms, powering an industry worth \$63.9 billion. About a quarter of the world's agricultural land (11.7 million hectares) and more than 80 percent (1.7 million) of the producers are in developing countries and emerging markets. Global sales of organic food and drink reached 72 billion US dollars in 2013.

Keywords: Organic farming, Organic food, soil health, sustainability and food security.





Integrating Genomic and Proteomic Efforts in Date Palm Research

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ABSTRACT

Date palm (*Phoenix dactylifera* L.) is historical plant grown mainly in the Arab World (>70%), North Africa and several other countries of the globe. The United Nations Food and Agricultural Organization recent recognition of the date palm oases of Al Ain and Liwa as agricultural heritage sites (both in the United Arab Emirates) further highlight the regional importance of this plant. Date palm is considered as a heritage of desert culture and offers sustainable food solutions particularly in regions having harsh driest climatic condition. Due to its sturdy nature this plant has been surviving since centuries and relatively lesser integrated efforts have been directed toward improving its yield and cultivation. Over the past decade, there has been surge of genomic studies addressing date palm cultivation and recent proteomics work to identify proteomic markers to be used for early detection of date palm infestation with highly damaging insect the Red Palm Weevil (RPW) from our laboratory.

We have evaluated date palm proteome upon infestation with one of its highly damaging insect the red palm weevil. The proteomics data reveal, there are significant changes in the date palm proteome upon infestation with RPW that could be exploited to develop a reliable marker for early detection of this disease impinging significant losses to this crop. Furthermore, we have also optimized methodologies to be used in date palm proteomic research¹ as envisioned in one of our publication². An overview of historical date palm research leading to the ongoing genomic and proteomic efforts will be described in this paper/presentation. Based on all the available and newly emerging data relevant to date palm, a need for Date Palm Consortium promoting integrated research on various aspects of this plant will be highlighted.

1. Rasool, K.G., Khan, M.A., Aldawood, A.S., Tufail, M., Mukhtar, M., Takeda, M. (2014) Optimization of protein isolation from date palm plants and its utilization in differential proteomics associated with red palm weevil infestation. *Pak J Agric Sci*, 51(4):907-917

2. Mukhtar, M., Rasool, K.G., Parrella, M.P., Sheikh, Q.I., Pain, A., Lopez-Llorca, L.V., Aldryhim, Y.N., Mankin, R.W., Aldawood, A.S. (2011) New initiatives for management of Red Palm Weevil threats to historical Arabian Date Palms. *Florida Entomologist*, 94(4):733-736





Evaluation of metals that are potentially toxic to agricultural surface soils, using statistical analysis, in north-western Saudi Arabia

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ABSTRACT

Heavy metals in agricultural soils enter the food chain when taken up by plants. The main purpose of this work is to determine metal contamination in agricultural farms in north-western Saudi Arabia. To this end, 57 surface soil samples were collected from agricultural areas. The study focuses on the distribution and geochemical behaviour of As, Cd, Co, Cr, Cu, Hg, Pb, and Zn, and determines the enrichment factor and geo-accumulation index; multivariate statistical analysis, including principle component analysis, and cluster analysis, are also applied to the acquired data. The GIS method is used to prepare the metals and the enrichment factor spatial distribution maps. The study shows considerable variation in the concentrations of the analysed metals in the studied soil samples. This variation in concentration is attributed to the intensity of agricultural activities and, possibly, to nearby fossil fuel combustion activities, as well as to traffic flows from highways and local roads. Multivariate analysis suggests that Cd, Cr, Cu, Hg, Pb, and Zn are associated with anthropogenic activities, whereas Cr and As are mainly controlled by parent materials. Most of the studied metals are present in concentrations exceeding the permissible limits, with Hg and Pb being the most abundant.

Keywords: Metals, contamination assessment, multivariate analysis, agricultural soils, north-western Saudi Arabia.





Nanotechnology and its Applications in Modern Agriculture, Renewable Energy, and CO₂ Capture

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ABSTRACT

Nanomaterials exhibit unique physical and chemical properties significantly different from their bulk counterparts.¹ The intricate relationship between nanostructure and functionality has opened up a whole new area of research where scientists worldwide aim at exploring, understanding and exploiting the potential of nanomaterials.

Nanotechnology is one of the most important tools in modern agriculture, and Agri-food nanotechnology is anticipated to become a driving economic force in the near future. Agri-food theme's emphasis on sustainability of the food products including crops for human consumption and animal feeding. Nanotechnology provides new agrochemical agents and new delivery mechanisms improve crop productivity, and it promises to reduce pesticide consumption, as we know the harmful effects of pesticides on human health as well as on the environment.

Nanotechnology promises to accelerate the development of biomass is an abundant and readily available feedstock that has great potential as a renewable source of fuel and chemical intermediates. We are exploring new catalytic routes to convert the biomass-derived diol and polyols to hydrocarbons as a renewable energy. ^{2,3} In addition, hybrid nanocomposites plays a substantial role in Carbon dioxide capture and showed the CO₂ adsorption properties.⁴ This presentation will emphasize the scope and efficiency of Nanotechnology for the modern agriculture, renewable energy production, and CO₂ Capture towards Sustainable World.

Keywords: Nanotechnology, Modern Agriculture, CO₂ capture, Renewable Energy

References:

- [1] Challa S. S. R. Kumar, Biology and pharmaceutical Nanomaterials, 1st edition; WILEY-VCH: 2006; volume-2.
- [2] S. V. kuturi, G. Chapman, I. Ahmad, K. M. Nicholas, Inorganic Chemistry, 2010, 49 (11), 4744
- [3] I. Ahmad, G. Chapman and K. M. Nicholas, Organometallics, 2011, 30 (10), 2810.
- [4] R. Kumar, D. Raut, I. Ahmad, U. Ramamurty, T. K. Maji and C. N. R. Rao, Materials Horizons, 2014, 1, 513.





Seed germination of Potential native plants for oil production in the United Arab Emirates

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ABSTRACT

Recently, more attention has been focused on the sustainable utilization of wild edible plants as climate change poses a threat to global food stocks and to human security. In the Arab gulf region, UAE is an important focal point of botanical diversity, and many wild plant species have been used since ancient times for food and medicinal purposes. We studied seed germination requirements of three plants native to the UAE have great potential for producing high quality oil. These are *Citrullus colocynthis*, *Moringa peregrina* and *Cyperus conglomeratus*. Seeds were germinated in three temperature regimes of 15/25°C, 20/30°C and 25/35°C in both continuous darkness and alternating light/darkness. *Citrullus colocynthis* had specific requirements for germination; germinated to very high levels in both light (91.7%) and darkness (81.7%) at 25/35°C, but not germinated at all in light and to 47% in dark at 15/25°C. Seeds of *M. peregrina* showed little dormancy. Germination was high both in light and dark at all temperatures of incubation. Germination ranged between 82.5% in dark at 30/40 °C to 95% in light at 20/30 °C. Seeds of *C. conglomerates* germinated more in light as compared to darkness. Germination at higher temperature (25/35 °C) was significantly greater than both lower temperatures (15/25 and 20/30 °C). Our results indicate that both temperature and light effects should be considered in germination studies to attain the highest possible germination. At the Sharjah Seed Bank and Herbarium, we are conserving seed from most native plants of the UAE and running germination studies for understanding the propagation of the potentially important plants.

Keywords: Germination, Native edible plants, Sharjah Seed Bank and Herbarium, Sustainable development.



Application of Genomics to Improve Seed Isoflavones Contents in Soybean

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ABSTRACT

Isoflavones are secondary metabolites naturally occurring in legumes including soybean [*Glycine max* (L.) Merr.]. These isoflavones mainly daidzein, genistein, and glycitein have many health benefits in humans. Therefore, attempts have been made to increase their quantities in soybean cultivars. Here, we will discuss (1) these isoflavones and their importance, (2) the genomic approaches used to genetically map quantitative trait loci (QTL) that control the amounts of these isoflavones in soybean seeds for that last decade and a half, (3) summarize these QTL studies, and (4) show how these approaches can be used to improve any important crop in the region. The approach of QTL mapping will be discussed in details: the development of a mapping population, molecular markers genotyping and construction of genetic linkage maps, and QTL mapping using the latest genomics software.

Keywords: Soybean, QTL, Isoflavones, genomics.





Economic Impacts of United Arab Emirates (UAE) Fisheries Sector Sustainable Practices Investments

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ABSTRACT

United Arab Emirates (hereafter UAE) witnessed decline of per capita fish availability due to decreased of fishing stock in the last three decades. Declining fish supply challenges food security in the country. The research focuses on exploration of possible direct, indirect, and Induced economic and societal impacts of adaptations strategies that are technically sound, socially sustainable, and economically feasible in the country. The research considered three selected climate change scenarios (base, wet, and dry scenarios), use climate and non-climate interaction matrix, apply appropriate Social Accounting Matrix (SAM) and multiplier approach to measure the extended impacts of investment in the UAE fisheries sector's sustainable practices. Initial results showed that the fisheries sector's direct impact or fish landed value is estimated to be about \$ 113 million annually, indirect impact is estimated to be \$116 million annually on the UAE economy. Meanwhile, induced Impact is estimate at \$28 million annually. This research attracted both scholars and graduate students to participate in the research activities. Research beneficiaries include the climate change and fisheries research community in UAE, policy and decision makers, fisheries communities' organizations.

Keywords: Fisheries, Economic Analysis, Sustainable Practices, Uncertainty, United Arab Emirates.





Global Warming: Impact on Fisheries and Aquaculture A Threat to Food Security

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ABSTRACT

Global warming, ocean acidification and ozone depletion of the upper atmosphere are the three events of climate change which are found to have adversely affected the ecosystem and their biotic and abiotic resources. The global sea level rise is around 3 mm per year, caused primarily by warming of the ocean and melting of glaciers while the sea level rise at Indian Ocean is ca. 2 mm per year. According to the Intergovernmental Panel on Climate Change (IPCC), global sea levels are rising at an increasing rate, which is projected to be around 59 cm by 2100 and at worst scenario it can go up to 2 m. 84% of the total heating of the Earth system since 1950s is in the oceans. The global Sea Surface Temperature (SST) anomaly was more than 0.5°C in the past century. IPCC (2007) reported the major impacts of climate change as global warming and changes in productivity, leading to changes in community structure, sea level rise, development of precipitation regimes, hampering nutrient transport, increase in storm and cyclone activity, stratification due to melting of ice, changes in the fishery independent parameters, increase in acidification, humidity and temperature. The major impacts of sea level rise are on coastal agriculture, tourism, freshwater reserve, fisheries, aquaculture, human settlement, health, biodiversity, damage to fishery infrastructure such as landing centres, harbours, coastal dwelling units, ancillary industries, etc.

The human population has grown from 1.5 to 6.4 billion from 1900 till now and is predicted to increase to 9 billion by the year 2050. Not surprisingly the fact remains that malnourishment is probably one of the challenges if not the biggest challenge facing the globe, with an estimated 840 million being in a state of malnourishment (UNWFP, 2005). It is essential to ensure the health of the world population by providing nutritionally balanced, especially protein rich food. Animal husbandry and fisheries are the two sources of animal protein for the world population. Demand for fish is escalating day by day while the average global per capita consumption rate is 16 kg/year. According to FAO, by 2025 the per capita consumption would be 25 kg and in the same will be 40 kg by 2050. By 2050 the total requirement of fish on a global basis is estimated to be 325 million metric tons.





Fisheries and aquaculture play important roles in food supply, food security and income fluctuation globally. About 43.5 million people are directly involved with this sector, with majority among them in developing countries. This sector supports nearly 200 million livelihoods. Climate change threatens the inherent relationship between food and climate, and damages irreversibly the natural resource base on which fisheries and aquaculture depends. The climate change will have negative effects on aquaculture due to increased temperature and oxygen demands, uncertain supplies of freshwater, extreme weather events, sea level rise, increased frequency of diseases and toxic events and uncertain supply of fishmeal from capture fisheries.

Climate change and the consequent ocean warming is a principal threat to biodiversity, structure and functioning of ecosystems. Marine fishery is most vulnerable to the aftermaths of climate change. The relationship between climate change and fisheries is inter-alia how climate change affects the various components of ecosystem and their functioning. Changes in the distributional boundaries of fishes are an example. Oil sardine had a restricted distribution between latitude 8° and 14°N and longitude 75° and 77°E and till 1985, during the past two decades the catches are increasing from the latitudes 14° and 20°N. Distribution of Indian Mackerel is extended to deeper waters in the last two decades. Many fishes and cephalopods in world oceans are shifting towards higher latitudes. Increase in temperature leads to faster growth, early maturity thereby decrease in longevity. Global warming will produce squid that grow faster but have a smaller body size. Cephalopods forced into deeper water to spawn or even to cooler latitude. Other changes in fisheries are change in harvest time, change in biology and physiology, change in distributional limits, change in spawning period and invasion of pathogens.

Temperature related coral bleaching combined with the effects of increasing ocean acidification threatens the function and persistence of coral reef. The loss of coral reef habitat has detrimental implications for coastal fisheries in islands where reef-based subsistence and tourism activities are often critical to the wellbeing and economies of islands. Like coral reefs, mangroves and sea grass environments provide a range of ecosystem goods and services and both habitats play a significant role in the wellbeing of communities.





Some of the mitigation measures and adaptive strategies proposed are reduce fleet over-capacity and adopt measures to reduce the carbon foot print of the fisheries sector, estimate future production levels relative to environmental changes, improve fisheries governance, including institutional building of fisheries administrations and representative sector organisations, develop tools for decision-making and expand societal knowledge, create alternative employment and livelihood opportunities, expand and diversify aquaculture, enhance emergency preparedness and response, and developing insurance and social safety schemes in the fisheries sectors, apply international fishery agreements and conventions more vigorously to control climate change related activities, integrate climate considerations in investment in the fisheries sector, market and label goods produced following recognized energy efficient standards (eco-labelling) and develop options for product and export diversification through appropriate economic and trade policies.

Keywords: Global Warming, Fisheries, Aquaculture, Mitigation





Response of the Asian Sea Bass Lates Calcarifer Fingerlings to Different Feeding Rates and Feeding Frequencies Reared in Hyper Saline Condition

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ABSTRACT

Abstract. This study aimed to develop a suitable feeding program for the Asian seabass, *Lates calcarifer* fingerlings under supersaline condition by testing different feeding rates (FR) and feeding frequencies (FF). Three feeding rates namely: 1%, 2% and 4% and three feeding frequencies 1X, 2X and 4X were used in the study. Results showed that growth after 60 days parameters gave the highest values with 4% and 4X. FCR increased with increasing FR, while better FCR and PER was achieved with increasing FF. Survival rates in all the feeding rates and frequencies were almost 100%. Significant relationship was recorded between growth, FCR and PER and feeding rates, but not with FF. No significant relationship in both FR and FF with survival rate. Interaction effect of FR and FF was exhibited in all the growth parameters and FCR. All the water quality values obtained were within the safe limits for rearing the Asian seabass fingerlings.

Keywords: Asian seabass, feeding rates, feeding frequencies, growth, Feed conversion, Survival, water quality.





Global Warming: A potential Threat to Fish Resources

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ABSTRACT

Densely populated South Asia is home to nearly 40% of the world's poorest people, those who survive on less than a dollar a day. India has the world's highest proportion of malnourished children, with 46% of its pre-schoolers underweight. Closely following are Nepal with 45%, Pakistan with 38% and Bangladesh with 37%. In Sri Lanka, 29% of pre-schoolers are underweight. The combined population of these five countries is expected to rise from the current 1.5 billion to 2.2 billion by 2050, with the biggest increases occurring in rural areas where the poorest people live (WFC-2009). Together, population growth and global climate change threaten to reverse hard-won gains against extreme poverty and hunger. The fisheries sector differs from mainstream agriculture and has distinct interactions and needs with respect to climate change. Capture fisheries has unique features of natural resource harvesting linked with global ecosystem processes. Aquaculture complements and increasingly adds to supply and, though more similar to agriculture in its interactions, has important links with capture fisheries.

Climate change is projected to impact broadly across ecosystems, societies and economies, increasing pressure on all livelihoods and food supplies, including those in the fisheries and aquaculture sector. Climate change is predicted to add additional threats (such as increase in water temperature, more unstable flow regimes) while interacting in complex ways with other stressor types, such as eutrophication. Consequentially, sensitive freshwater species will change their distribution; some will migrate to cooler locations, while others may perish. Non-indigenous species are expected to take over and extend their distributional ranges. Food quality will have a more pivotal role as food resources come under greater pressure and the availability and access to fish supplies will become an increasingly critical development issue. Urgent adaptation measures are required in response to opportunities and threats to food and livelihood provision due to climatic variations.





Long Term Impacts of Global Warming and Coastal Effluents on the Future of Desalination Technologies in the Arabian Gulf Countries

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ABSTRACT

The prime objective of this study is to evaluate the impacts of global warming and coastal effluents forcing on long term salinity and temperature of the Arabian Gulf (AG) and to evaluate the operational cost of different desalination technologies given such impacts. This may potentially represent a limiting economical and operational factor in desalination process selection to meet the growing demands. This was done using the 3-D Delft Hydrodynamic Model (HD) validated against short term and long term field observations. Atmospheric Ocean General Circulation Model (AOGCM) data base was used to obtain future data of air temperature, precipitation, and sea level rise of the AG. The HD was used to simulate a total of 17 scenarios each with duration of 90 years to appraise the AG future conditions under different coastal effluent conditions. An assessment mathematical tool was developed to map the projected changes in salinity and seawater temperature into operational cost, particularly the chemical and electrical costs of different desalination technologies. Accordingly such technologies were ranked with time for each desalination plant (total of 34 plants) to advice on the most appropriate planning approaches at each location until 2080. A main finding of this work indicated insignificant impact of the AG future ambient conditions on the operational cost of all desalination technologies with Multi Stage Desalination (MED) technology expected to be the least affected one in all plants and at all times.

Keywords: Desalination, Arabian Gulf, Global Warming, Coastal effluents.



Impact of Climate Change on Long Term Rainfall Trend in UAE and Future Challenges: A Case Study of Sharjah Airport Data

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ABSTRACT

In United Arab Emirates and MENA region in general, the challenges imposed by water scarcity, due to climatic change and escalating water demand triggered by the growing population and economic activities, requires dire efforts of development, management and preparedness. If water security is ensured, the security of other social and economic sectors mainly food, health, and energy will automatically follow. Worldwide global warming, more specifically climate change, is not only severally affecting the regional hydrological cycle and water resources but also triggering variability in the frequency of extreme events, floods and droughts. According to the IPCC report published in 2013 and the World Bank report "Adaptation to a Changing Climate in the Arab Countries" one of the most affected regions, in this regard, will be the Middle East. To look for a quantitative evidence of climate change trends impacting water security, long term annual rainfall data recorded at one of the meteorological station in Sharjah is collected and analyzed. Results of rainfall trend analysis indicate a decrease in annual precipitation, which simply means less availability of fresh water for future generations. To add to complexity, a change in monthly precipitations patterns and frequency of extreme rainfall events is also observed. In the full paper, details of data, rainfall trend analysis, frequency analysis with thorough discussion on future challenges and water resources management will be fully presented.

Keywords: Climatic change, rainfall trends, water security, water resource management





Socio-Economic Impacts of Marine Oil Spills on Arabian Gulf Populations

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ABSTRACT

Petroleum contamination is a growing environmental concern that harms both terrestrial and aquatic ecosystems. However, the public and regulatory and scientific communities have given more attention to the contamination of marine habitats. This is because marine oil spills can have a serious economic impact on coastal activities, as well as on those who exploit the resources of the sea. Thus, communities that are at risk of oil disasters must anticipate the consequences and prepare for them. The deliberate release of around 6 million barrels of oil during the 1991 Gulf War in the marine environment is the largest oil spill in history. In the Gulf of Mexico, the BP Deepwater Horizon (DWH) oil spill on 20th April, 2010, which lasted over approximately three months, is the second largest in human history. Communities that are threatened by marine oil spills have developed their own plans and policies to counteract the risk of marine oil contamination. These range from permitting or prohibiting increased oil transport volumes, to developing the capacity to respond to and recover from potential oil spill disasters. Considering that approximately half of the world's oil production comes from the Arabian Gulf States and passes through the Arabian Gulf, its liability to pollution is about 48 times that of any other similar area on earth. Thus, the Arabian Gulf is possibly the most chronically oil-polluted marine area in the world. Due to the different anthropogenic activities relating to oil spills, in addition to the natural environmental stresses of the Arabian Gulf, a number of socio-economic impacts are predicted. The multi-million dollar fish industry will be threatened, as well as the desalination of plants that supply most of the Arabian Gulf populations' freshwater. Furthermore, people with careers in scuba diving will lose their jobs. As a result, the scuba diving tourism sector will also come under threat.

Keywords: Contamination, Crude, Economic, Gulf, Hydrocarbon, Impact, Marine, Oil, Petroleum, Socio, Spill





From Kayak Designs To A Clean World Profitably

Tim Niemier
Seattle, USA

ABSTRACT

Malibu Beach Bum, Tim Niemier introduced the sit on top kayak to the world 35 years ago. He is living his goal of getting 1 billion butts in boats or boards. Tim and his paddlers world wide now work to protect the environment they enjoy and use no fuel in the process. Now Tim is involved with Google and many other design projects that use the global information network to achieve much more efficient, clean, and profitable goals. The key is getting more value from less resources through better design. Tim will share his vision of how this is not only possible but our inevitable future.





Increasing food availability, reducing food footprint – an assessment

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ABSTRACT

Many regions of the world have been successful in making rapid progress at reducing food insecurity yet the challenges of meeting future food needs and alleviating hunger remain enormous. Available data reveals that of the 7,000 odd plants cultivated by humans for food, only about 30 species are responsible for providing over 90% of the global food supply. Rice, wheat and corn form the major calories and proteins providers in the human diet. We are now in a precarious position as agriculture has become more unpredictable due to climate change. Degradation of terrestrial and aquatic environment are also negatively impacting food security. Meeting the growing demands for food requires the development of crops that can make better use of limited resources. Improving seeds, using seeds adapted to soil types and climate in a particular region, improving nutrient contents, organic farming are some of the options. In order to develop environmentally sustainable food production research and involvement of the community are to be encouraged. Potential models developed by some countries can be replicated to benefit other areas too. Accelerated agricultural productivity alone cannot play a role in addressing the food crisis. There is an intrinsic relationship between global reduction in food wastage and food security. It is apparent that less food waste can decrease environmental impacts, improve resource efficiency and productivity.

Keywords: food security, crop improvement, sustainable agriculture, food wastage





Paradoxical Relationship between Food Supplies and Environmental Degradation

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ABSTRACT

Being the most powerful, knowledgeable, vibrant and resourceful among all creatures the humans carry an extremely important duty of respecting nature and increasing the long term effectiveness and sustenance of natural resources, and hence of its abode i.e. planet earth. Therefore, it is in the very interest of humans to make serious efforts to conserve and regenerate natural resources on which it depends more heavily now as compared to the past. The human population has increased in geometrical proportions during the last few centuries and is likely move in that direction in the years to come.

In this very context, this paper attempts to highlight issues related to the process of economic development with close focus on food security and its impact on environment. The rising levels of income inequalities in Pakistan at present which cause major upwards shifts in poverty levels are closely related to environmental degradation in water bodies. The eclectic, though somewhat misplaced, approaches followed to increase food production levels have resulted in heavier use of chemicals in agricultural and thereby causing water pollution. The paradigms of food security measures taken so far seem largely devoid of well-defined scientific methods related to production and post-production processes. Furthermore, in the production and marketing of food items 25 to 40 percent of the gross production is lost which ultimately affects consumer prices and contributes towards increase in poverty. This paper attempts to identify the disjointed policies and practices in food production and marketing process which instead of stabilizing food security apparatus have tended to degrade water bodies. Using macro level data and research efforts made so far, attempts are being made to find relationship between short and long term policies in finding a set of sustainable approaches to avoid the paradoxical interplay between food security and environmental sustenance currently in place.





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