



Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Posters

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Efficiency of using seaweed extracts under varying levels of N-P-K on growth, yield and quality of sweet potato (*Ipomoea batatas L.*)**Amira Abd El Hamid Helaly Ali**
Alexandria University, Egypt

Two field experiments were carried out at the Agriculture Experimental Station Farm (Abies region), Faculty of Agriculture, Alexandria University; during the two summer seasons of 2013 and 2014. The objective of this study was to assess the response of sweet potato plants (*Abies cv.*) to the spraying with three concentrations of seaweed extract (0.5%, 0.75% and 1.0%), as well as a control treatment (spraying with distilled water) under, varying NPK levels of mineral fertilizer (25%, 50%, 75% and 100% of the recommended rate, in addition to a control treatment, without NPK application) and their interactions on vegetative growth characters, yield and its components as well as on some chemical compositions characters of tuber roots. The results revealed that the gradual increases of NPK fertilizer levels were accompanied with significant increases on sweet potato growth, yield and its components as well as the chemical composition of tuber roots. Spraying of sweet potato plants with seaweed extract at the concentration of 0.75% led to positive response on the all studied traits, in both growing seasons. Generally, the most efficient treatment combination which gave the best sweet potato growth, yield and tuber roots chemical compositions was the application of NPK mineral fertilizer, at the rate of 75% of the recommended, with seaweed foliar spray at the concentration of 0.75%. On this regard, it is possible to reduce the NPK mineral fertilization by 25%, through using a foliar spray of 0.75% seaweed extract concentration without compromising the production value of the sweet potato plants, concerning the quantity and quality of tuber roots.

Biography

Amira Abd El Hamid Helaly Ali has her expertise in Agriculture Science. She has experience in the field of plant breeding as the subject of her Master's theses and also in the field of organic farming using natural alternatives in fertilization, in which she studied the possibility of reducing the NPK mineral fertilization, through using a foliar spray seaweed extract concentrations without compromising the production value of the sweet potato plants. She has built this model after years of experience in research, evaluation, teaching and administration in education institutions.

amira.helaly@alexu.edu.eg
mirooo.ah1@gmail.com**Notes:**

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

The adaptation of the bacterial plant pathogen *Pseudomonas syringae* onto a novel host through experimental evolution**Andrew Jamnik**

University of Toronto, Canada

The bacterial plant pathogen *Pseudomonas syringae* is a highly diverse species complex, with the ability to cause disease on a wide range of hosts, including many economically important crops. Although *P. syringae* as a species has a very large host range, individual strains are highly host specific. The inability of a strain to infect plant species outside of its host range is generally due to its inability to suppress and evade the host's innate immunity. Few studies to date have tested how plant pathogens evolve to overcome novel host immunity, and a further understanding of this could help in uncovering how newly emerging diseases arise. In this study, we are currently experimentally evolving *P. syringae* pv. *phaseolicola* (*Pph*) 1448A, a strain which causes disease on many cultivars of the common bean (*Phaseolus vulgaris*), on the non-host *Arabidopsis thaliana* (*Arabidopsis*) through *in planta* experimental evolution. Although *Pph* 1448A is unable to cause disease on *Arabidopsis*, its ability to grow and persist on *Arabidopsis* has given this strain the potential to adapt within this novel environment. We have constructed 12 uniquely barcoded hyper mutating lineages of *Pph* 1448A for this experiment, to increase the evolvability of the lineages and to allow us to study mutations associated with adaptation towards *Arabidopsis*. By using highly sensitive *in planta* competition assays on *Arabidopsis*, we've shown that after 80 days of *in planta* growth on *Arabidopsis*, two lineages have shown significant gains in fitness on the novel host. Additionally, one of these lineages has shown a gradual increase in fitness throughout the experimental evolution. Population sequencing of these adapted lineages will give us the ability to identify candidate mutations responsible for this novel host adaptation. Overall, this work will provide a further understanding of the early adaptive processes underlying the spread of existing pathogens to new hosts.

Biography

Andrew Jamnik is currently a second year MSc candidate at the University of Toronto working under the supervision of Dr. David Guttman. His research has focused on understanding the evolutionary steps a plant pathogen takes to overcome novel host immunity, and to cause disease on a new host. He has specifically been working with the model bacterial plant pathogen *Pseudomonas syringae* and has designed and implemented *in vivo* experimental evolution to uncover the evolutionary steps required for novel host adaptation. Throughout his graduate degree, he has learned both invaluable microbiology skills along with a better understanding of evolutionary genomic analyses.

andrew.jamnik@mail.utoronto.ca

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Antagonism of *Pseudomonas* sp. EMM-1 and its potential as biocontrol agent

Catherine Cesa-Luna, Joel de la Cruz-Enríquez, Ana Laura Hernández-Tenorio, Fernando Xicale-Nava, Yolanda Elizabeth Morales-García, Rocío Pérez-y-Terrón, Antonino Báez-Rogelio, Jesús Muñoz-Rojas and Verónica Quintero-Hernández
Benemérita Universidad Autónoma de Puebla, Mexico

Bacteria may exhibit antagonistic interactions to compete for space and nutrients in their habitat. This competition has been mainly evaluated by double-layer agar and simultaneous inhibition assays. The best known antagonistic bacteria are *Enterococcus*, *Lactococcus*, *Streptomyces*, *Bacillus*, *Pseudomonas*, *Klebsiella*, *Escherichia* and *Burkholderia* due to their potential to produce inhibitory substances such as broad-spectrum antibiotics, organic acids, siderophores, antifungal and bacteriocins. Our study model, *Pseudomonas* sp. EMM-1, is a Gram-negative bacterium isolated from contaminated soil highly competitive due to the production of one or more inhibitory substances. It has been demonstrated its antimicrobial activity against diverse beneficial and pathogenic microorganisms including the genera *Bradyrhizobium*, *Azotobacter*, *Staphylococcus*, *Streptococcus*, *Klebsiella* and *Burkholderia*; as well as the *phytopathogenic* fungi *Pantoea* and *Fusarium*. In this work the ability of *Pseudomonas* sp. EMM-1 to inhibit diverse fungi isolated from soil and plants with fungal diseases, such as *Aspergillum* and *Fusarium* was verified by the double-layer agar assay, leading us to assume its potential as biocontrol agent.

Biography

Catherine Cesa-Luna has completed her bachelor's degree in Clinical Chemistry in 2012 from Universidad Veracruzana, México and obtained her master's degree in Microbiologic Sciences (Medical Microbiology) in 2016 at the Benemérita Universidad Autónoma de Puebla, Mexico; where she is currently pursuing her Ph.D in microbiology. She is evaluating the antimicrobial activity of synthetic IsCT-like peptides derived from scorpion venoms on bacteria of clinical interest and also working on the purification and identification of compounds related to the activity of the inhibitory substance produced by *Pseudomonas* sp. EMM-1.

kathy_cl_3@hotmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Inhibition activity of probiotic supernatants against the cariogenic *Streptococcus mutans*María del Pilar Angarita Díaz¹, Sidónio Ricardo da Cunha Freitas¹, Alejandro Mira Obrador², Claudia Maria Bedoya Correa³ and Alejandro Peláez Vargas³¹Universidad Cooperativa de Colombia, Colombia²Fundación para el Fomento de la Investigación Sanitaria y Biomédica, Spain³Universidad Cooperativa de Colombia, Colombia

Statement of the Problem: Among the alternatives strategies to antibiotics are other antimicrobial substances like bacteriocins. However, since their production and purification is laborious and costly, an attractive approach is the administration of probiotic bacteria with bacteriocin-producing capabilities. These types of probiotic bacteria like *Lactobacillus rhamnosus* isolated from the intestinal tract and *Streptococcus dentisani* isolated from the oral cavity have been studied for diseases control. Therefore, the aim of this study was to determine the inhibitory effect of supernatants from *L. rhamnosus* and *S. dentisani* on *S. mutans*.

Methodology & Theoretical Orientation: Broth cultures of *L. rhamnosus* GG and *S. dentisani* 7746 were prepared with 100 nephelometric turbidity units and grown overnight to reach stationary phase. The cultures were centrifuged at 4000rpm for 10min, and the supernatants recovered and filtered to remove any bacteria cells. 100µl of each supernatant were added to 100µl of fresh culture of serotype c strains *S. mutans* UA159 and ATCC 25175 at 10⁸ CFUs/ml in a 96-wells plate. Controls were 100µl of *S. mutans* strains with 100µl culture medium used for the growing of each probiotic bacteria (BHI for *S. dentisani* and MRS for *L. rhamnosus*). The 96-wells plate was incubated at 37°C inside a UV/V are spectrophotometry reader and the absorbance was monitoring at 600nm every 20minutes for 15h.

Findings: The supernatants of *S. dentisani* 7746 and *L. rhamnosus* GG present an inhibitory effect against the cariogenic strains *S. mutans* 25175 and UA 159. The inhibition with the supernatant of *L. rhamnosus* was immediate while with the supernatant of *S. dentisani* was significant after 3h (p=0.038, T-student).

Conclusion & Significance: The use of supernatants from probiotic bacteria *S. dentisani* and *L. rhamnosus* has an inhibitory effect against two strains of cariogenic *S. mutans*. Further studies are recommended with different supernatant concentration.

Biography

María del Pilar Angarita Díaz has a degree in Microbiology and Ph.D in Biotechnology. The knowledge in these topics has allowed her to contribute in the Faculty of Dentistry of the Universidad Cooperativa de Colombia, in different studies such as probiotics for caries prevention and control, and microbiologic analysis of dental material. She teaches in the area of the oral microbiology, knowledge that is enriched with the research.

maria.angarita@campusucc.edu.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Facultative anaerobic bacteria and their relationship to the characteristics of gutta-percha cones**María del Pilar Angarita Díaz, Diana Carolina Rozo Ortíz, Diana Forero Escobar, Andrea Isabel Arias Ubaque, Alvaro Imbachi Lizcano and Laidy Johanna Sandoval Díaz**

Universidad Cooperativa de Colombia, Colombia

Statement of the Problem: During endodontic therapy, the specialist seeks to remove the microorganisms present in the root canal and prevent new microorganisms from accessing the area by establishing inhospitable conditions. However, it has been revealed that some of the microorganisms involved in endodontic infectious processes, are able to adapt to such conditions. Thus, if the endodontic materials like gutta-percha cones contain microorganisms that are resistant to the conditions in the root canal once it is sealed they can lead to new infections. Given the different characteristics, the need to subject gutta-percha cones to disinfection processes is questioned. The purpose of this study was to determine the presence and quantity of facultative anaerobic bacteria in gutta-percha cones used by dentistry students, and to determine whether there is a relationship between the presence of the bacteria and the students' use of the instruments.

Methodology & Theoretical Orientation: A representative sample of gutta-percha cones used by the dentistry students at UCC, Villavicencio campus (n=81) was collected. At the same time as collecting the cone samples, information was gathered. The cones were inoculated in blood agar and incubated for 5 days at 35°C in anaerobiosis. The colonies were identified by VITEK system.

Findings: The microbiological analysis revealed that 32.1% of the cones were contaminated by facultative anaerobic bacteria. Among the bacteria identified in this study: *Staphylococcus epidermidis*, *Streptococcus mitis* and others bacterias. With respect to the relationship between the presence and quantification of facultative anaerobic bacteria, and the characteristics of the cones used by the students, the only significant differences found were between the groups defined by opening date. However, there was no linear relationship.

Conclusion & Significance: No relationship is found between the presence and quantity of this type of bacteria and the cone properties, indicating that contamination is random more than it is conditioned by opening and expiry date, brand, and diameter. As such, disinfection before use is essential.

Biography

María del Pilar Angarita Díaz has a degree in microbiology and Ph.D in biotechnology. The knowledge in these topics has allowed her to contribute in the Faculty of Dentistry of the Universidad Cooperativa de Colombia, in different studies such as probiotics for caries prevention and control, and microbiologic analysis of dental material. She teaches in the area of the oral microbiology, knowledge that is enriched with the research.

maria.angaritad@campusucc.edu.com

Notes:

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Cultural ecosystem services of different landscapes in Ugam Chotqol National Nature Park**Madina Bekchanova**

Wageningen University, Netherlands

Landscapes are the main resources of providing the sufficient amount of ecosystem services like the provision of food and material, provision of cultural ecosystem services such as recreation, aesthetics or spirituality. However, cultural ecosystem services are rarely studied and little is known about spatial localization of these services. In this research, a framework is adopted and tested in order to classify and map the provision of cultural ecosystem services as observed by tourists in Ugam Chotqol National Nature Park, i.e. Tashkent region in Uzbekistan. In this study a photo-based questionnaire survey is joined with cartographical images of landscape classes to obtain hot and cold spot provision areas of cultural ecosystem services. Statistical analysis is used to represent influences of the respondents' socio- demographic background and land-use type on the tourists' perception of these services. According to the results, each of the studied cultural ecosystem services, showed the various spatial patterns on the basis of its distribution and in different landscapes to which they are related. Specifically, traditionally survived areas, located in highlands between 1200 and 3500 m asi are considered as hotspot areas for recreational activities, aesthetic beauty and cultural heritage. While, the lowland plains of the study area mainly provide tourists with the spirituality. Results demonstrate that for the tourist perception the highest influence is obtained from land use type, while other aspects such socio demographic factors (gender, age, cultural background, environmental behaviour) and respondents perceived importance of the services are significant but they play subordinate role. It can be concluded that, spatial information about the provision of cultural ecosystem services can help us to design further implementation of land use policies.

Biography

Madina Bekchanova has her skill in evaluation of ecosystem services and motivation of enhancing spatial localization of each component of ecosystem services. Her thesis is based on analyzing Cultural Ecosystem Services (CES) and its association with different landscapes. After having taken sufficient amount of Master courses in Integrated Ecosystem Assessment, she started to write her thesis. Her thesis is mainly for representing the significance of landscapes in the provision of cultural ecosystem services and tourists perception of CES in different landscapes. In order to analyze tourists perception she used econometric model and simultaneously, she used GIS tools to classify various landscapes. This research can be very helpful for decision makers to plan further operations.

madina.bekchanova@wur.nl

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Effect of different weed management practices on growth and yield of brinjal (*Solanum melongena* L.)**Sumeet Singh, Kulbir Singh, D S Khurana and V Sardana**
Punjab Agriculture University, India

In an experiment conducted at vegetable research farm, PAU Ludhiana in 2012-13, a study was conducted to evaluate the effect of integrated weed management in brinjal cv. BH-6747. The experiment was conducted both in nursery and in field crop. Nine different weed control treatments were used in nursery experiment which included solarization (30 days before sowing), pendimethalin 0.225 kg a.i./ha, pendimethalin 0.300 kg a.i./ha, oxyfloufen 0.120 kg a.i./ha, oxyflourfen 0.175 kg a.i./ha, trifluralin 0.240 kg a.i./ha, trifluralin 0.300 kg a.i./ha along with weed free and un-weeded plot. Pendimethalin and oxyflourfen were used as pre-emergence and trifluralin was used as pre-plant herbicide. Minimum dry weight was recorded in chemical treated plots of oxyfloufen 0.175 kg a.i./ha as compared to rest of treatments which indicated maximum weed control in nursery. In field experiment fifteen different weed control treatments were used which included black plastic mulch, herbicides and manual weeding. Pendimethalin 0.75 a.i.kg/ha, pendimethalin 0.56 a.i.kg/ha alone and then pendimethalin 0.56 a.i.kg/ha integrated with hand weeding (45 DAT) and then with directed spray of gramaxone 1.0 a.i.kg/ha (45 DAT) was used. Similarly, it was used with oxyflourfen 0.15 a.i.kg/ha and with trifluralin 0.60 a.i.kg/ha. Minimum dry weight was achieved in black polythene mulch followed by oxyflourfen integrated with hand weeding. Other attributes like plant height, number of branches, fruit weight, fruit girth and length and total yield were superior in black mulch treatment followed by oxyflourfen integrated with hand weeding. Maximum gross return was in black mulch followed by oxyflourfen 0.15 a.i.kg/ha+hand weeding (45 DAT). It is thus concluded from the present investigation oxyflourfen 0.175 kg a.i./ha can be used in the nursery of brinjal while oxyfloufen 0.15 kg a.i./ha followed by hand weeding after 45 days after transplanting can be recommended in brinjal crop to get maximum benefit.

Biography

Sumeet Singh is currently a Ph.D scholar of Vegetable Science at Punjab Agricultural University and has completed his Master's and Bachelor's from Punjab Agricultural University, Ludhiana, India. He is engaged with one of the pioneer research work of Vegetable grafting in Punjab and has achieved merit fellowship.

sumeet0051@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Effect of biofertilizers on nutrient uptake and quality attributes in onion (*Allium cepa* L.)**Dilpreet Talwar and Kulbir Singh**
Punjab Agricultural University, India

Biofertilizers improve the nutrient uptake and quality attributes of onion by reducing the inorganic fertilizers dose and improving the farmer's income. The study was conducted at Vegetable Research Farm, Punjab Agricultural University, Ludhiana. In an experiment, fifteen treatments comprised of various combinations of biofertilizers, organic manures and chemical fertilizers were compared. Biofertilizers improve the nutrient status of the soil because *Azotobacter* and *Azospirillum* provide nitrogen to plant and soil by fixation process. The results revealed that N and K level in soil at time of harvesting was maximum in T₃ (*Azospirillum* along with recommended dose of N, P and K) while P level was found to be maximum in T₅ (PSB along with recommended dose of N, P and K). Maximum TSS, Ascorbic acid and dry matter was attained with *Azospirillum* along with recommended dose of N, P and K followed by *Azospirillum* along with 75 % dose of N and full dose of P and K and it was significantly superior than control treatment. It may be concluded that *Azospirillum* either along with RDF or with 75 % dose of N suggested for sustainable production of onion.

Biography

Dilpreet Talwar is currently a student of Ph.D program in which he is specializing in Vegetable Science at Punjab Agricultural University, Ludhiana. He has done his Bachelor's of Sciences in Agriculture with Horticulture as an elective and Masters in Vegetable Science. It was his capacity that he kept up with his co-curricular activities as a PAU magazine editor (Punjabi Section, year 2014-15). He got University merit scholarship during 3rd and 4th semester of his masters.

dsingh381@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Effect of bio-fertilizers on microbial count in soil, growth and yield attributes of rainy season tomato**Barinderpal Singh, Kulbir Singh, Dilpreet Talwar and Madhu Sharma**
Punjab Agricultural University, India

Bio-fertilizers are living microorganisms, derived from roots or soil, which improve the soil microbial content, growth and yield attributes in rainy season tomato. In an experiment, 14 treatments comprising of various combinations of bio-fertilizers, organic manures and chemical fertilizers were compared to assess the impact of different sources of nutrients on performance of tomato. The results revealed that plant height after 30, 60 and 90 days of transplanting, number of branches per plant, number of fruits per plant and leaf surface area was found to be maximum with the application of *Azotobacter* along with recommended dose of fertilizers (T_1). Likewise, application of *Azospirillum* along with recommended dose of fertilizers (T_3) produced maximum fruit weight, fruit diameter and total yield. Highest soil organic carbon content (0.38 %) was observed in the treatments T_{11} (FYM @ 20 t/ha along with *Azotobacter* and *Vesicular-Arbuscular Mycorrhizae* (VAM)) and T_{12} (Farm Yard Manure (FYM) @ 20 t/ha). Highest bacterial count (26.2×10^6) and actinomycetes count (36×10^4) was recorded in treatment T_{12} (FYM @ 20 t/ha). It can be concluded that, the application of *Azotobacter* along with recommended dose of inorganic fertilizers improve vegetative growth, while *Azospirillum* along with recommended dose of inorganic fertilizers improves yield attributes in rainy season tomato as far as the sustainability and environmental considerations are concerned. The present study highlights the need of usage of bio-fertilizers along with organic and inorganic manures/fertilizers to enhance the nutrient availability and improve soil health.

Biography

Barinderpal Singh is currently a student of Master's program in which he is specializing in Vegetable Sciences at Punjab Agricultural University, Ludhiana. He will complete his Master by May 2017. He has been engaged in pioneer research work "Integrated nutrient management in tomato". He has done his Bachelor of Sciences in Agriculture with Horticulture as an elective.

barinderpalsinghbrar@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Micro-irrigation: Technology for efficient use of water in vegetable cultivation-A review**Kamalpreet Kaur, Prabhjot Kaur, Dilpreet Talwar and Kulbir Singh**
Punjab Agricultural University, India

Artificial application of water to soil or crop is known as irrigation. The increased competition for water between agricultural, industrial and urban consumers creates the need for continuous improvement of irrigation practices in commercial vegetable production. At present, the efficiency of the irrigation systems adopted is less than 30%. The design of study was descriptive research. To know the status of micro-irrigation, review was collected by evaluating the research work done on micro-irrigation in vegetables. With the use of surface and sub-surface irrigation methods, ground level of water is depleting day by day in India and Punjab. In Punjab, 110 blocks out of 142 blocks were under dark zone of water. In case of vegetables, more number of irrigation is required due to more number of harvests. In the last decade, micro-irrigation technologies are very helpful to enhance the profit of farmers by improving the water use efficiency. Major micro-irrigation technologies are drip irrigation and sprinkler irrigation. The results reveal that micro irrigation is a water saving technique, reduces the energy use; increasing yield and quality of crops, reduce weed problems, soil erosion and cost of cultivation in labour-intensive operations in tomato, chilli, brinjal, capsicum, cucumber and sweet potato etc. It improves the water use efficiency by reducing the water losses and evapo-transpiration losses from fields. Farmers did not adopt micro-irrigation technologies due to complex practices, lack of knowledge, problem of dripper clogging and high initial investments. It can be concluded that there is need to promote these technologies by organizing camps at farmer field/block level or by providing subsidy to farmers or by creating awareness about declining water table to farmers so that farmers should adopt micro-irrigation technologies which helps to improve the water table of soil.

Biography

Kamalpreet Kaur is currently a student of Ph.D program in which she is specializing in Extension Education at Punjab Agricultural University, Ludhiana. She will complete her Doctorate by June 2017. She has done her Bachelor of Sciences in Agriculture with Agronomy as an elective and Master's in Agricultural Extension Education.

preetkamal646@gmail.com

Notes:

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Local uses and management of spices, condiments and non-edible oil crops**Zufan Nigusu** and **Tamrat Bekele**
Addis Ababa University, Ethiopia

A study aimed at identifying and documenting local uses and management of of spices, condiments and non-edible oil crops in five selected sites in Northern Ethiopia was conducted. A total of 78 informants which consists, 6 agricultural experts, 12 spice vendors, 45 garden owners and 15 cultivated field owners were encountered. This study documented the traditional knowledge of the local people on using, managing and other ethnobotanical aspects based on information through semi-structured interview, field observation, market survey and informant consensus methods. 27 spices and condiments (92.6% herbs, 3.7% shrubs and tree), three non-edible oil crops, *Jatropha curcas*, *Ricinus communis* and *Vernonia galamensis* were collected from homegardens, farmlands, and wild habitats. Local uses and their distribution and traditional conservation methods are noted. Altitudinal ranges, habit, habitat of spices, condiments, and non- edible oil crop plants were documented. Results of preference ranking on 7 spices and condiments showed that *Capsicum annum*, *Allium sativum*, *Capsicum frutescens*, *Ruta chalepnesis*, *Ocimum basilicum*, *Trigonella foenum-graecum* and *Nigella sativa* are the most common food flavorings in the area. *Allium sativum* is the most preferred medicinal spice followed by *Ruta chalepnesis*, *Lepidium sativum*, *Foeniculum vulgare* and *Artemisia absinthium*. The most threatening factors include replacement of spices and condiments by cash crops, grazing, scarcity of water, Pests, and ill-advised method of harvesting. The day to day uses of spices, condiments, non-edible oil crops and plants requires administrative and conservation activities. Technical support from the government and non-government organization to boost the production within the boundary of the agroecosystem is recommended.

Biography

Zufan Nigusu, an MSc holder in biology from Addis Ababa University, is among the few female scientists in Ethiopia who brought change in management of spices, non- edible oil crops and condiments related to the environment. She has had an influence on the development of a new perspective on the use and management of spices, non- edible oil crops and condiments in Ethiopia. Her suggestions got attention by the government and brought a significant change on the ecosystem by preserving the spices, non-edible oil crops and condiments that were about to disappear from the face of the earth. She is an enthusiastic female scientist working hard to bring about change both on-site and in the classroom.

zufand@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Soil salinization and water quality degradation in Bukhara region, Uzbekistan**Mirkhon Asadov**

NGO Ecoinvest, Uzbekistan

The Central Asian lowlands are characterized by an arid and continental climate. At the same time, the large streams and rivers have been providing water for the development of flourishing oases and extensive irrigated farming areas. Bukhara is one of those oases. The population of 1.7 mln and especially the agricultural sector (with an irrigated area of 275,000 ha) use a considerable amount of water. But as the flat topography does not provide sufficient natural drainage, water logging and raising groundwater tables have become serious problems for the agricultural productivity. The combination of the high salinity of the irrigation water and the generous application of fertilizers leads to a widespread soil salinization. Excessive leaching is supposed to reduce the top soil salinity, but as the drainage system is only covering a small portion of the irrigated areas and is in need of maintenance, this process only contributes to the ongoing salinization and the reduction of soil fertility and crop yields. Obtained data indicate that the groundwater table is rising throughout the region while the groundwater salinity is decreasing. The soil salinity on the other hand is, after an improvement during the first half of the study period, slightly increasing since 2009, which also is reflected in the slight worsening of the condition of the reclaimed land during the same period. Most of the plains in the Aral Sea basin are characterized by a high natural soil salinity. In the floodplains the salinity is increased by the accumulation of salty minerals eroded in the upstream mountainous regions. Due to the arid climate and the intensive irrigation farming the floodplains are also prone to the hazardous development of secondary soil salinization. Furthermore, the Aral Sea Basin countries, especially Uzbekistan and Turkmenistan, are heavily impacted by the climate change because of the high sensitivity of the arable lands in the arid lowlands as well as a strong population and economic growth and increasing demands for the food safety. The climate change (increase of the air temperature and the evapotranspiration), long-term reduced runoff from the Central Asian glaciers and more frequent droughts also increase the water consumption for irrigation. As a consequence of this, the soil salinity will further increase and the productivity of the agricultural lands will continue to deteriorate.

Biography

Mirkhon Asadov has experience in assessing the state of the environment, health and welfare of the population. As the General Director of the NGO "Toza Tabiat"- "Pure Nature", he developed a number of international joint projects. In co-operation with the Central Asia Aid Fund (CAAF) (the Netherlands) and the NGO Toza Tabiat (Uzbekistan), "Drinking water for two villages in the Bukhara region (2005-2008)" was implemented. Within the framework of this project, the NGO "Toza Tabiat" drilled one well (110 m), and two villages were supplied with drinking spring water. Currently, he is working as a construction manager for the company and implements projects for environmentally friendly private homes and oversees a research group on monitoring and assessing the quality of drinking water in the region.

mirhona@mail.ru

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Antifungal activity of essential oil from *Artemisia campestris L* on fungal species developmentKhaldi A¹, Meddah B^{1,2} and Moussaoui A¹¹University of Bechar, Algeria²University of Mascara, Algeria

This work studies the antifungal capacity of the essential oil of spontaneous aromatic plant with vocation medication used in the traditional treatments in the South-West of Algeria: *Artemisia campestris L*. The local plant which was tested gave good essential oil yield (0.37%). The physico-chemical analysis of the essential oil of this plant species has enabled us to even characterize to identify our oil. Antifungal activity of the essential oil was studied with respect to seven fungal strains with various concentrations. The results of direct contact method show that the oil of *Artemisia campestris L* is proven very effective on the mycelial growth of the moulds. All strains were inhibited at concentration as weak as 1/70 (v/v), *Fusarium oxysporum* f.sp. *albedinis* and *Penicillium expansum* were most sensitive, being inhibited as from 1/800 (v/v) and 1/500 (v/v) respectively. This essential oil has a fungistatic effect. In addition to the growth of the mycelium, the essential oil of plant showed, in vitro, an antifungal activity at least important on the two other developmental stages, germination and the sporulation, of all fungi. All strains were inhibited at concentration as weak as 1/100 (v/v). *Fusarium oxysporum* f.sp. *albedinis* was most sensitive, being inhibited as from 1/1500 (v/v).

Biography

Khaldi A is a Ph.D student at the University of Bechar, Algeria. He received a Master of Science from the Division of Graduate Studies.

achrafssystemdz@yahoo.fr

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Antimicrobial activity of *Oliveria decumbens* Vent. extract against isolated microbes from the environmentBatool Sadeghi-Nejad¹ and Sedigheh Yusef Naanaie²¹Abadan School of Medical Sciences, Iran²Agriculture and Natural Research Center, Iran

Objective: Prevalence of diseases originated from air pollution such as asthma and allergies, which is caused by pathogenic bacteria, is the main reason for transmitting of the bioaerosols. Bacteria and fungi are the main sources of hospital infections, which cause the most diseases and mortality. The aim of this study was to determine antimicrobial activity of the ethanolic extract of *Oliveria decumbens* leaf against five bacterial strains such as *Staphylococcus aureus*, *Enterococcus faecalis*, *Escherichia coli*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa* and three candida species such as *Candida albicans*, *C. glabrata* and *C. tropicalis* derivative from the infected environment of hospital in southeastern of Iran.

Methods: Selected Plant extract was prepared by using maceration. Minimum inhibitory concentration of extracts was determined by well diffusion agar method.

Results: The ethanolic extracts of *Oliveria decumbens* leaf was found to be moderate antimicrobial potential, but it was the highest antimicrobial activity against *Staphylococcus aureus* with minimal inhibitory concentration (MIC) 1.25 mg ml⁻¹. Also, it was active against *Candida* spp. with MIC 2.5-5.0 mg ml⁻¹.

Conclusion: It was observed the ethanolic extracts of *Oliveria decumbens* leaf could be a potential bioactive agent as detergent for the inhibition of growth of microbial environmental specially soil microbes.

Biography

Batool Sadeghi-Nejad is working as an assistant professor at the Abadan School of Medical Sciences, Abadan, Iran. She has extended his valuable service for many years and has been a recipient of many award and grants. Her international experience includes various programs, contributions and participation in different countries for diverse fields of study. Her research interests reflect in his wide range of publications in various national and international journals.

batsad4@yahoo.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Antimicrobial activity of *Zataria multiflora* extract on *Candida* species isolated from environmentNasrin Amir Rajab¹, Sadegh Tehrani¹, Yusef Yalaly¹, Ehsan Ahmadi¹, Sedigheh Yusef Naanaie² and Batool Sadeghi-Nejad³¹University of Medical Sciences, Iran²The Agricultural and Natural of Resources center, Iran³Abadan School of Medical Sciences, Iran

Background & Purpose: Yeasts including *Candida* species are isolated from the infected environment of hospital in southeastern of Iran. Exposure to fungi has been reported to cause several types of human health problems, primarily irritations, infections, allergies, and toxic effects, and it has been suggested that toxigenic fungi are the cause of additional adverse health effects. On the other hand, the most of synthetic antimicrobial products have some side effects, which make them less popular. Hence, the aim of this study was to evaluate the antifungal properties of *Zataria multiflora* extract against *Candida* species isolated from the infected environment of hospital in southeastern of Iran.

Materials & Methods: In this study, we assessed the activities of *Zataria Multiflora* leaf extracts against *Candida* species, including *C. albicans*, *C. glabrata*, *C. tropicalis*, using the agar-well diffusion method.

Results: The minimal inhibitory concentrations (MICs) values of fruit and leaf extracts from *Zataria Multiflora* leaf extract ranged 1.56-12.5 mg/ml against the tested *Candida*.

Conclusion: Based on the results, the ethanolic extracts of the selected plants exhibited antifungal potency against the tested fungi and could be used as alternative natural antimicrobial agent and recommended to be used in formulation of herbal disinfect for the inhibition of growth of microbial environment in future researches.

Biography

Nasrin Amir Rajab is a Ph.D student at the University of Medical Sciences, Iran. She received a Master of Science degree from the Division of Graduate Studies. Her experience includes various programs, contributions and participation in different countries for diverse fields of study.

n_amirrajab@yahoo.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Population structure and genetic diversity of an endangered and endemic Moroccan tree (*Argania spinosa* L. Skeels) based on AFLP and IRAP markers**Ouafae Pakhrou¹, Leila Medraoui¹, Chaimaa Yatrib¹, Mohammed Alami¹, Abdelkarim Filali-maltouf¹, Bouchra Belkadi¹, Fouad Manda², Abdelhamid El mousadik², Saad Ibn Souda-kouraichi³, Cherkaoui El modafar⁴ and Abderrahim Ferradous⁵**¹Mohammed V University, Morocco²Zohr University, Morocco³LBM, Morocco⁴Cadi Ayyad University, Morocco⁵Forestry Research Center, Morocco

Argania spinosa L., the only representative of the monotypic genus *Argania* (Sapotaceae) is a plant endemic to Morocco with a great ecological and economical values. The oil extracted from the Argan fruit possesses innumerable nutritional and cosmetic properties. However, the area and the density of the argan forest are in continuous deterioration. In the present study, two molecular marker techniques AFLP and IRAP were used for genetic evaluation of 130 individuals collected from 13 population locations in south-west Morocco. A total of 477 polymorphic bands were amplified by 4 primer AFLP combinations specific to regular genome, and 154 polymorphic bands were observed using 4 IRAP combination primers. Average polymorphic information content (PIC), resolving power (RP) and marker index (MI) were 0.24, 12.7 and 9.40, respectively for IRAP markers, while AFLP markers showed high resolving power (35.81) and Marker index (25.61), also the polymorphic information content was 0.21. The two-marker techniques target different regions of the genome, which justifies the need to combine two markers in obtaining reliable estimates of genetic diversity. Cluster analysis of the combined data revealed that 130 individuals could be divided into two sub-populations based on STRUCTURE, UPGMA (Unweighted pair group method with arithmetic mean) clustering, and PCoA (principal coordinate analyses). The Jaccard's genetic similarity ranged from 0.17 to 0.60 and the genetic differentiation among populations was low (AMOVA = 19%, G_{st} = 0.21), indicating the possibility of gene flow between the studied populations (N_m = 1,809). These results have an important implication for Argan tree germplasm conservation and management programs.

Biography

Ouafae Pakhrou got her Master's degree in crop production and during her end-of-course internship she worked on the molecular characterization of cork oak (*Quercus suber* L.) using molecular markers ISSR and SSR. recently, she obtained her Doctorat in Molecular biology and plant biotechnology and worked on the characterization of genetic diversity of an endemic tree to Morocco "Argan tree". This study aims to identify promising trees that can be used in the constitution of a "core collection" and the establishment of conservation and management programs. This work is carried out in the Laboratory of Microbiology and Molecular Biology at the Faculty of Sciences of Rabat University Mohamed V and financially supported by Hassan II Academy of Science and Technology (Morocco)

o.pakhrou@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Development of a core collection for Argan tree in Morocco by heuristic search based on SSR markers**Chaimaa Yatrib¹, Ouafae Pakhrou¹, Leila Medraoui¹, Mohammed Alami¹, Abdelkarim Filali-maltouf¹, Bouchra Belkadi¹, Fouad Manda², Abdelhamid El mousadik², Saad Ibn Souda-kourachi³, Cherkaoui El modafar⁴ and Abderrahim Ferradous⁵**¹Mohammed V University, Morocco²Zohr University, Morocco³LBM, Morocco⁴Cadi Ayyad University, Morocco⁵Forestry Research Center, Morocco

The argan tree (*Argania spinosa* L.) is an oil-agro-forestry-pastoral tree that is endemic to Morocco and with a very important socio-economical role. However and due to drought in the early century the argan ecosystem has become overgrazed. This phenomenon combined with overexploitation of argan for fuel, together with land clearance for agriculture, resulted in an alarming reduction of the argan forest. In order to facilitate extensive examination at genetic, phenotypic, and physiological levels and to provide a subset of representative accessions, it is necessary to construct a core collection based on molecular data. In the present study, and for the first time, a core collection of argan tree was constructed from accessions covering all the argan forest's distribution area in Morocco by heuristic search and based on 13 Simple Sequence Repeats (SSR) marker combinations. Our study showed that the relationship between the core collection and the geographic distribution of the entire collection is very weak. Also, the number of amplification bands in the core collection was the same as in the entire collection (245 alleles). Shannon's index for only one of the SSR primers (7.69%) and Nei's index for three of the SSR primers (23.07%) were lower in the core collection than in the entire collection. The comparison of the random core collection and the true core collection showed that the latter retained larger genetic diversity. Altogether, the core collection constructed in our study is representative of the genetic diversity of and could help perform effective conservation strategy to preserve the Argan forest in Morocco.

Biography

Chaimaa Yatrib is Ph.D at Mohammed V university, Faculty of science in Rabat. She is interested in the study of genetic diversity and application of news molecular tools to the conservation of endangered species. She is currently working on the case of *Argania spinosa*. in the framework of the project ArganBiogen. This latter is supported by Hassan II Academy of Science and Technology (Morocco) and The Ministry of Higher Education, Scientific Research and Professional Training of Morocco.

yatrib.chaimaa@gmail.com

Notes:



Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

e-posters

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Response of groundnut plant to artificial inoculation**B P Jinturkar**

K G Kataria College, India

Different methods of *Rhizobium* inoculation were attempted and it was found that *Rhizobium* applied in the form of water suspension just below the seed gave maximum nodulation followed by lime pelleting. Groundnut seed often possess a problem of seed inoculation because of delicate seed coat. *Rhizobium* inoculation has significantly influenced all the nitrogen fixing traits which ultimately contributed to the dry pod yield of groundnut. Beneficial effects of inoculation of plant growth and yield have been frequently observed in groundnut *Rhizobium* interaction.

Biography

Bharat Jinturkar is currently working as a Principal at K G Kataria College, Pune, Maharashtra, India.

jinturkarbharat@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Cyanide degrading alkaliphilic bacteria from Rift Valley soda lakes and their potential for bioremediationBirhanu M Kinfu¹ and Amare Gessesse^{2,3}¹University of Hamburg, Germany²Addis Ababa University, Ethiopia³Nelson Mandela Metropolitan University, South Africa

Cyanide is a key component in mining and other applications which release up to giant lakes of toxic waste deadly to the environment. Treatment of cyanide waste is usually done by expensive chemical methods which only converts it to less toxic products. Bioremediation, on the other hand, is environment-friendly and more efficient alternative. The aim of this study was to explore selected alkaline soda lakes for cyanide degrading bacteria suited for high pH bioremediation conditions. Using medium provided with cyanide as a sole nitrogen source and pH of 10.2, 72 isolates able to degrade and utilize cyanide were found. After preliminary screening of the isolates based on morphology, ARDRA of PCR amplified 16S ribosomal genes following restriction digest using AluI, HaeIII and RsaI revealed the presence of nine polymorphic groups. 16S rDNA amplicon sequence analysis further details seven distinct bacterial species from which three belonged to genus *Bacillus*, three to genus *Halomonas*, and another was more close to an uncultured bacterium clone. Based on phylogenetic analysis, the later was more related to and clustered with *Halomonas* sub-lineages. Isolates CNA12, CNC1 and CNS10, isolated from Lakes Abijata, Chitu and Shala respectively utilized up to 99.33% of 200 mg/l cyanide and tolerated up to concentration of 600 mg/l cyanide in batch mode. While acetate was supplied as a source of carbon for isolation, cheap molasses interestingly enhanced bacterial growth and subsequent biodegradation of cyanide. In general, this study shows the presence of diverse cyanide utilizing alkaliphilic bacteria in the Rift Valley Soda Lakes with practical potential for bioremediation of cyanide waste.

Biography

Birhanu M Kinfu has obtained his MSc in Biotechnology from Addis Ababa University and worked as university Lecturer for 2 years. After winning the prestigious DAAD (German Academic Research Service) Research Grant Award under its 'Young Academics And Scientists' program, he is currently pursuing his Ph.D in Germany at the University of Hamburg, Microbiology and Biotechnology Department. He has published 3 papers in reputed journals.

birhanu.kinfu@uni-hamburg.de

Notes:



Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Accepted Abstracts

Anticandidal, antibacterial, cytotoxic and antioxidant activities of *Calendula arvensis* flowers**Abdulmalik Abudunia**

Mohammed V University, Morocco

Calendula arvensis (CA) is one of the important plants used in traditional medicine in Morocco, due to its interesting chemical composition. The present study aimed to determine the anticandidal, antioxidant and antibacterial activities, and the effects of extracts of CA flowers on the growth of myeloid cancer cells. Also, to characterize the chemical composition of the plant. Flowers of CA were collected based on ethnopharmacological information from the villages around the region Rabat-Khemisset, Morocco. The hexane and methanol extracts were obtained by soxhlet extraction, while aqueous extracts were obtained by maceration in cold water. CA extracts were assessed for antioxidant activity using four different methods (DPPH, FRAP, TEAC and b-carotene bleaching test). Furthermore, the phenolic and flavonoid contents were measured; also the antimicrobial activity has been evaluated by the well diffusion method using several bacterial and fungal strains. Finally, extracts cytotoxicity was assessed using MTT test. Phytochemical quantification of the methanolic and aqueous extracts revealed that they were rich with flavonoid and phenolic content and were found to possess considerable antioxidant activities. MIC values of methanolic extracts were 12.5-25 mg/mL. While MIC values of hexanolic extracts were between 6.25-12.5 mg/mL and were bacteriostatic for all bacteria while methanolic and aqueous extracts were bactericidal. In addition, the extracts exhibited no activity on *Candida* species except the methanolic extract, which showed antifungal activity on *Candida tropicalis* 1 and *Candida famata* 1. The methanolic and aqueous extracts also exhibited anti-myeloid cancer activity (IC₅₀ of 31 mg/mL). In our study, we conclude that the methanolic and aqueous extracts were a promising source of antioxidant, antimicrobial and cytotoxic agents.

abdelmalek.dunia@um5s.net.ma

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Assessment of air quality and human health surrounding in mines**Akhilesh Kumar Yadav, Saba Shirin and Aarif Jamal**

Indian Institute of Technology (BHU), India

Singrauli coal field in Uttar Pradesh and Madhya Pradesh are the richest coal bearing areas in India, which contain large quantities of high grade coal used in thermal power plants. Mining has a definite process of extracting the minerals from the open and underground mines inside the earth's crust. It is usually associated with the degradation of natural resources and the destruction of habitat. The visible impact of mining on environment and on air quality, human health when compositional changes immediately influence the health of mine professionals and adjoining population along with dusting of men and machinery in adjoining population. The suspended solid in the form of particulate matter has affected the respiratory system and affected the production also. The study has covered air pollutions in mines for various mining operations and its impact on the human health and environment.

yadavbasti@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

A study on local perspective of climate change impacts in Rakhaposhi valley of Central Karakoram National Park, Gilgit-Baltistan, Pakistan**Anila Ajmal and Babar Khan**
WWF, Pakistan

The present study attempts to provide an insight into the local climate change perspective in Rakhaposhi valley to make it simpler via bringing the factual illustrations of changing climate in mountain communities to stakeholders, resource managers and policy makers at local and national level. The finding of the study identifies the state of high altitude ecosystem services and the living standards of mountain communities, bearing the brunt of climate change. Increasing temperature, decreasing and more intense short-duration rainfall, and decline in snowfall together corroborate that climate has changed its pattern in the high mountain areas during the last 25 years. As an impact, in line to this, diminishing glaciers, waning water resource availability, relegating quality of alpine pastures and agricultural land aided by vegetation shifts, and increased pest infestation have worsened both the quantity and quality of ecosystem functions. Consequences of these combined effects have affected the local and so the per capita economy of the region in multiple ways. Resettlement is desirable due to lack of irrigation as well as drinking water supplies supporting life and livelihoods. In addition to the encumbering natural hazards i.e. GLOFs, flash floods, avalanches, droughts and landslides, outbreaks of seasonal, water and vector borne diseases have made local survival highly exigent. Therefore, this situation calls for an emergence of implementing an adaptive strategy against climate change in natural ecosystem, enabling the custodian communities to manage ecosystem functions for life, livelihoods and other ecosystem services and building community resilience against climatic anomalies.

anila.ajmal1@gmail.com

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

The effect of the biological life and man-kind on the Earth (mainly between 1778 and 2015)**Béla Ralovich**

Ministry of Welfare, Hungary

Components and events of the timeless and endless Universe are consequences of permanent flow of energy, that is substance under the direction of laws of eternal Nature which will never be totally known by man kind. All components of the Universe have lived their own anorganic life in accordance with the energetical/substantial processes of Nature. The life of our Earth is exceptional because of the presence of biological life. The biological life is a biological phenomenon of a living unit which lasts till the death of it. The living unit is a substantial matrix which is bordered by permeable membrane/wall. Inside the unit and through its membrane/wall an active organized and directed energy/substance transport flows which can only exist when the environmental circumstances are in accordance with the life requirements of the unit. Now it seems that the living unit is only present in the Bio-sphere of our Earth which is a closed system for it. The living unit has been affected by the outside effects and it can accommodate to those between the borders of its life requirements. In the same time it influences on its environment, too. In the case of any kind of closed systems it is obligatory permanently to ensure the specific life conditions which are necessary for a continuous biological life and reproduction. It seems that both the appearance of biological life and mainly that of man kind have caused fundamental effects on the Earth in consequence of which different periods and ages have been formed on it. It is necessary to know about these periods and ages because each of them had/have special energetic and substantial processes which had/have serious biological importance. Now we shall deal with only the latest age of the third period which has started in 1778.

ralovich.bela@freemail.hu

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Distribution and risk assessment of heavy metals in surficial sediments from Awash River basin, Ethiopia**Dirbaba Niguse Bekele, Hongjuan Wu and Jun Wang**
Huazhong University of Science and Technology, China

Like many parts of developing nations, rapid population growth, high urbanization rate and poor waste management practices have been observed in Awash River basin. On the other hand, no detailed and systemic study was conducted to determine the status of sediment pollution with heavy metals in the basin. 138 samples were taken from 46 sites and tested for determination of heavy metals content, distribution, pollution level, possible sources of pollutants and associated ecological risk. The results indicated that the mean concentration of the elements had exceeded their respective background values except Pb and Hg. A comparison with similar studies revealed that sediments from Awash River basin had highest average value for Cd. The mean enrichment factors of heavy metals were listed in increasing order as $Hg < As < Pb < Ni < Cu < Cr < Zn < Cd$. Multivariate analysis revealed that Ni and Cu had common sources while the other heavy metals were originated from different anthropogenic sources. The pollution load index value of the study area was 2.94, indicating high ecological pollution. Sediment quality guidelines revealed that heavy metals like Ni, Zn and Cr were the major concerns in the study area. The mean effects range from medium quotient values of sampling sites varied between 0.351-2.996 indicating medium priority up to high priority sites. Potential ecological risk index of trace elements from Awash River Basin was 343.67, designating high potential toxicity response. Generally, the study indicated that surficial sediment in Awash River Basin was polluted by heavy metals and posed high ecological risks.

nigusebekele@hust.edu.cn

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Linking soil microbiome with sustainability**Eiko E Kuramae**

Netherlands Institute of Ecology, Netherlands

Sustainable agriculture depends on healthy soil and soil microbial diversity and thus must focus on managing soil microbes to deliver more efficient ecosystem services to crops. Moreover, intensified crop production demands integrated nutrient management systems to maintain agricultural productivity and protect the environment. Using beneficial native microbes that promote plant health and quality, and recycling crop residues with low environmental impact are ultimate practices for sustainable food and energy production. Here I will present our studies on using biological native resources (beneficial bacteria and fungi) and recycling organic residues for sustainable crop production. Our studies have shown that sugarcane endophyte bacteria and fungi when inoculated in plantlets promote sugarcane plants growth, quality and health (microorganisms antagonistic to sugarcane pathogens). Subsequently following the crop cycling production, our studies on recycling of crop residue as a sustainable practice, showed that the combination of sugarcane residue (vinasse), rich in carbon, nitrogen and potassium when applied together with inorganic fertilizer, emits more nitrous oxide than inorganic fertilizers through nitrification process carried out by bacteria. To mitigate N₂O emissions we showed that the use of inhibitors of nitrification is a practical solution and, more importantly these compounds do not affect soil-borne microbial community diversity.

e.kuramae@nioo.knaw.nl

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

The effect of double-stranded RNA on the expression of the homologous gene in *Toxoplasma gondii***Fatme Al Anouti**

Zayed University, United Arab Emirates

The double-stranded RNA has been used in many organisms to interrupt gene expression at the post-transcriptional level. We have explored the use of in vitro synthesized double-stranded RNA for gene expression study in *Toxoplasma gondii*. We produced double-stranded RNAs homologous to the three well documented selectable markers the green fluorescent protein, the uracil phosphoribosyl transferase and the hypoxanthine-xanthine-guanine phosphoribosyltransferase. Each dsRNA was efficiently electroporated into the parasites and monitored for its effect on the expression of the homologous gene. The parasites electroporated with the double-stranded RNA homologous to the green fluorescent protein exhibited reduced fluorescence for the green fluorescent protein. The parasites electroporated with the double-stranded RNA homologous to the uracil phosphoribosyl transferase had low enzymatic activity for the uracil phosphoribosyl transferase, while the parasites electroporated with the dsRNA homologous to the hypoxanthine-xanthine-guanine phosphoribosyl transferase had low enzymatic activity for the hypoxanthine-xanthine-guanine phosphoribosyl transferase. To investigate the in vivo longevity of the effects of the electroporated double-stranded RNA, we utilized the uracil phosphoribosyl transferase. An operative uracil phosphoribosyl transferase assimilates 5-fluoro-2'-deoxyuridine ultimately leading to parasite clearance. Parasites electroporated with the dsRNA homologous to the uracil phosphoribosyl transferase became resistant to 5-fluoro-2'-deoxyuridine as a result of inhibited uracil phosphoribosyl transferase expression. Moreover, the effects of the double-stranded RNA homologous to uracil phosphoribosyl transferase persisted for three successive propagations of the parasites. Our study suggests that the double-stranded RNA could be a useful tool for gene silencing in *T. gondii*.

Fatme.Alanouti@zu.ac.ae

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Quality of medical care delivered to the patients in government hospitals in the city of Karachi**Hira Sabir Malik**

Bahria University, Pakistan

The first major objective of this study is to explore the service quality level of Public Hospitals in the city of Karachi from perspective of patients. Secondly, the satisfactions level of the ailing patients towards the services provided by these health care government sectors in general is investigated. The measurement instrument used in this study is based on questionnaires. Customer satisfaction and service quality are often treated together as functions of customer's perceptions and expectations. Research has shown that high service quality contributes significantly to customer satisfaction and customer delight. This study empirically explores the relationship between hospital quality management and service quality performance for a sample of patients of government health care hospitals in the city of Karachi. SERVQUAL model has been adopted to encompass various aspects of service quality. The study has been undertaken to demonstrate the gaps for measuring patient's perceptions-expectation of health care services quality in Govt. hospitals in the city of Karachi. In this study an attempt has been made to explore the service quality gap which is called gap score by means of making a comparison between customer's expectations and their actual perceptions towards the services and the government hospital patients are treated in. The purpose of this research is to provide review of the SERVQUAL research in measurement of health care service quality, to obtain information about quality parameters of services provided by Govt. hospitals of Karachi and to find out as to how much these parameters rate are as per the expectations of the patients. A sample size of 150 ailing patients is taken from department to department in different government hospitals situated in the city of Karachi. The results have shown an alarming situation where government hospitals are far away from the patients expectations. Furthermore there is an extreme need for training in the area of public hospital staff and their attitudes towards the ailing. Looking at the situation it is highly recommended that the government should take a country wide initiative to launch special programs where hospitals internal structures and work process is re-organized on the principles of quality management practices, through the introduction of ISO programs. This would help in improving the service quality at each stage of the services provided by these hospitals.

dr_hsmalik@hotmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Confirmatory assays for detection of *Neisseria gonorrhoeae* using *PorA* pseudogene real-time PCR base methods**Imarenezor E P K**

Federal University Wukari, Nigeria

Background: Since the advent of molecular techniques, diagnosis of *Neisseria gonorrhoeae* has been ruin by false positive results when compared with culture, which is currently the gold standard. False positive results are often due to the cross-reaction of nucleic acid amplification test (NAAT) with closely related non-pathogenic *Neisseria* species. Regardless of the availability of commercial NAATs for *N. gonorrhoeae*, issues surrounding the specificity of these platforms persist.

Objectives: This research aims to institute, heighten and compare the sensitivity and specificity of previously available *N. gonorrhoeae* real-time assays which target the *porA* pseudogene.

Methods: During investigation, 156 gonococci specimens and 30 non-gonococci culture specimens were used. Optimization of the *PorA* pseudogene real-time PCR was carried out by varying the concentration of magnesium chloride as follows: 5mM ranges between 19.08 (4.31) and 23.27 (17.57), 4 mM ranges from 17.18 (1.15) and 22.01 (16.43) and for 3 mM the range is from 21.71 (2.20) and 27.33 (15.27) with the standard deviation in bracket and as well as the forward and reverse primers which has varying concentration as 50 mM, 300 mM and 900 mM for both.

Results: The results obtained show the high specificity of the assays for all 156 gonococci culture specimens gave positive results, whilst the 30 non-gonococci specimens gave negative results. This shows that *PorA* pseudogene real-time PCR is a suitable assay for the confirmation of putative *N. gonorrhoeae* cultures and can assist in identification, particularly in cases where traditional biochemical and immunology tests have failed. The potential of the *PorA* pseudogene real-time PCR to detect the presence of *N. gonorrhoeae* specific DNA directly from clinical samples was then evaluated. An initial experiment was performed which involved the addition of a primer and probe set which acted as an internal control, it was determined that the internal control did not compromise the sensitivity of the *PorA* pseudogene real-time PCR assay and could be used reliably to screen for assay inhibition. The *PorA* pseudogene real-time PCR was then used to examine some clinical specimens which had been examined previously at three laboratories, each of which different commercial *N. gonorrhoeae* NAAT platforms was used. The results from this investigation show a high specificity evidence of *PorA* pseudogene real-time PCR when compared to previous results obtained from the other laboratories.

Conclusion: The study has succeeded in establishing to very large extent that the *PorA* pseudogene real-time PCR is a very valuable assay for the detection and confirmation of *N. gonorrhoeae* specific DNA from both putative cultures and directly from clinical samples.

kimarenezor@yahoo.com

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Effects of monochloramine on *Legionella* spp. and other opportunistic pathogens from a hospital water distribution systemJingrang Lu¹, Ian Struewing², Colin White³, Stacy Pfaller¹ and Darren Lytle¹¹EPA, USA²Pegasus Service, USA³Ohio EPA, USA

The goal of this study was to evaluate the effects of monochloramine on the occurrence and quantity of *Legionella* spp., *L. pneumophila*, *Vermamoeba vermiformis*, *Mycobacterium* spp., and *Pseudomonas aeruginosa* estimated using qPCR at 16 point of use locations in a hospital before and after installation of a building-size monochloramine system. Monochloramine was operated with the parameters recommended by the manufacturer, maintained detectable concentrations at every site and monitored. Generally, significant reductions of mean values of monthly detections were found for all the targeting organisms. The reductions (occurrence %/mean quantity CE L-1) are as follows from high to low: *P. aeruginosa* (from 34/1.41×10⁴ to 1/3×100), *L. pneumophila* serogroup 1 (from 86/9.34×10³ to 34/4.1×10¹), *Legionella* spp. (from 88/1.26×10⁴ to 42/4.01×10²), *Mycobacterium* spp. (from 92/1.42×10⁶ to 65/6.17×10⁵) and *V. vermiformis* (from 75/1.33×10³ to 18/5.45×10²). We concluded that monochloramine was effective for reduction of *Legionella* spp., *L. pneumophila* and *P. aeruginosa* to a low or undetectable level, but was less or insignificant reduction for *V. vermiformis* and *Mycobacterium* spp.

lu.jingrang@epa.gov

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Niche, neutrality or niche-neutrality continuum?**Rafi Kent**

Bar Ilan University, Israel

Niche theory is a cornerstone of community ecology. A major goal of ecological research is to understand how the requirements for resources of different species could explain the composition and dynamics of communities. Such work has had some substantial successes, allowing, for instance, a mechanistic understanding of temperate forest compositions based on species' adaptations. Niche theory has been invoked to explain many of the properties of ecological communities, including species abundance distributions and species-area curves. In contrast, Hubbell's neutral theory of ecology and biogeography is based on an explicit assumption that all species have identical properties, so that community composition is determined by demographic random walks and dispersal limitation rather than species adaptations to the environment. The debate between niche and neutral approaches to ecological communities has been heated at times, leading to polarization within the research community. A synthetic approach was then proposed, attempting to reconcile these competing ideas, and proposing that niche and neutral communities are at the two ends of a continuum. Accordingly, communities are structured both by species' environmental requirements (ala' niche theory) and by dispersal limitation (ala' neutral theory). As with many debates in ecology, it seems likely that the relative importance of niche-based and neutral processes shift with context. The next challenge is then to elucidate the situations conducive to highly niche structured or nearly neutral communities. Several modelling studies have proposed that species richness may be a major axis for the so-called 'niche-neutrality continuum'. This is corroborated by experience; some of the best worked examples of niche-structured communities come from relatively species-poor north-temperate forests, whereas species-rich tropical forests provide classical examples of nearly-neutral communities. Here I will demonstrate the NNC using empirical approaches with bird assemblages in the USA and Australia, as well as some theoretical advances.

refael.kent@biu.ac.il

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

UV induced DNA damage repair in bacteria**Khalil A El Halfawy**

University of Sadat City, Egypt

The “Dogma” that has been accepted for many years in the field of mutagenesis and lethal of effect in bacteria was non-selective in the nature of its repair mechanism, as well as, non-special and rather primitive. We studied the influence of a temporary specific inhibition of post-radiation macromolecular syntheses and of preliminary UV irradiation on the kinetics of accumulation of fixed mutations, that is mutations insensitive to MFD, in UV-irradiate *B. subtilis* cells. From experimental results, it is deduced that the entry of pre-mutagenic lesion into a round of replication, initiated before irradiation, is not a fixing event in UV mutagenesis. For performance of fixation, the proceeding of replication, initiated after irradiation, and protein synthesis are necessary. In irradiate cells incubated in medium with lowered concentration of nitrogen sources, the anti-mutagenic activity of UVR-dependent repair system competes with the process of fixation for pre-mutagenic lesions and reduce the efficiency of mutagenesis. The most efficient fixation and mutagenesis occur at high concentration of nitrogen sources in post-radiation medium, when the manifestation of anti-mutagenic activity appears to be blocked. The possible nature of a process leading to mutation fixation in the detection of specific pathway-dependent mechanisms being conferred only to the acquired post-irradiation metabolism. It had also long been believed that both pre-mutagenic as well as pre-lethal lesions are same pathways function until the adaptive repair mechanisms come into actions. However, this simplistic sight, in which DNA repair performs, could not explain how bacterial cell recognize and trigger different repair pathways cascades responses.

khalil.halfawy47@gmail.com

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Efficacy of microbial bio-controls agents to manage the soil-borne pathogens associated with chili (*Capsicum annum* L.) in Pakistan**Kiran Nawaz, Ahamad Ali Shahid, Muhammad Nasir Subhani, Sehrish Iftikhar and Waheed Anwar**
University of the Punjab, Pakistan

Soil-borne pathogens are responsible for a number of chili diseases, including root rot, blight, fruit rot and damping off is mainly controlled by using chemical fungicides, but chemical fungicides have got some adverse effect on the environment as well as human beings. Soil samples were collected from chili growing areas of the Punjab and pathogens were isolated on corn meal agar medium (CMA). Fungal pathogens such as *Phytophthora* and *Pythium* species were identified on a morphological basis by using taxonomic keys available in the literature. Selected fungal isolates showing typical morphological characteristics of *Phytophthora* and *Pythium* species were further verified by amplification of ITS region and TEF1- α gene. Keeping this in mind an experiment was conducted to test the efficacy of four bio-control agents (*Trichoderma viride*, *Trichoderma harzianum*, *Pseudomonas fluorescense*, and *Bacillus subtilis*) in controlling root rot of chili under field and in *in vitro* condition. These antifungal compounds were applied 3 times at 7 days interval after the first appearance of the disease in the field. Among the bio control agents *T. viride* was found highly effective in percent disease reduction (52.39%) of disease over control treatment. The root length (35 cm) and weight (26 g) was also highest in this treatment compared to control treatment. This was followed by treatment T2 i.e. where per cent incidence was (19.10%) respectively, with a 38.97% reduction of disease over control. It was followed by *T. harzianum* where percent incidence and was (22.90%) respectively, with a 26.30% reduction of disease over control. The efficacy of these bio-control agents under *in vitro* conditions was evaluated, *T. harzianum* and *T. viride* showed maximum inhibition of fungal radial growth. Therefore, these microbial bio-control agents can be used for managing the early blight of potato.

kirannawaz34@gmail.com

Notes:

Antibiotics and antibiotic resistance of soil bacteria in ecosystems**Lyudmila Symochko**

Uzhhorod National University, Ukraine

Antibiotics are extensively used for animal farming and for agricultural purposes. Residues from human activity and from farms may contain antibiotics and antibiotic resistance genes that can contaminate natural environments. The purpose of this study was to detect the antibiotic resistance soil bacteria in different ecosystems: Natural ecosystem (primeval forest) and agro-ecosystems. A total of 184 isolates from soil of primeval forest and rhizosphere of medicinal plants: *Mentha piperita*, *Inula helenium*, *Thymus serpyllum*, *Rosa odorata* and *Calendula officinalis* were examined for resistance to nine antibiotics. Among bacteria isolated from soil with cultivated *Thymus serpyllum* two of them: *Serratia marcescens* strain 428 and *Yersinia enterocolitica* strain 1020 were moderately resistant to majority of tested antibiotics. From the rhizosphere of *Inula helenium* was isolated one of the most antibiotics resistant bacteria among the others which were tested-*Pantoea agglomerans*. From agro-ecosystem of *Mentha piperita* was isolated and tested *Serratia odorifera* biogroup 1. This strain was resistant to vancomycin, lincomycin, and ampicillin, and moderately resistant to cefepime. From agro-ecosystems of *Calendula officinalis* and *Rosa odorata*, where used organic manure, high level of antibiotic resistance was detected for *Enterococcus faecalis* strains 321, 324 and *Bacillus cereus* (370). A study of soil samples from the primeval forests showed that the microbial community was characterized with low content antibiotic-resistant microorganisms. Among 78 isolated bacteria only two of them *Bacillus cereus*, strain 510 and *Pantoea agglomerans* (434) demonstrated high level of resistance to antibiotics. From this study it is concluded that there were marked differences between the levels of antibiotic resistance in soil microbial community of natural ecosystems and agro-ecosystems. The populations of soil microorganisms in agro-ecosystems were more antibiotic resistance. Two species of antibiotic-resistant bacteria *Bacillus cereus* and *Pantoea agglomerans* were common to both ecosystems. The effect of antibiotics on the biosphere is wide and can impact the structure and activity of environmental microbiota.

lyudmilassem@gmail.com

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Breach of rhizobial host specificity and colonization of *V. radiata* root nodules by *rhizobacteria***Maharshi Pandya**

University of Baroda, India

Legumes develop symbiotic relationship with rhizobia following complex exchange of signals. Regardless of high specificity of symbiosis, isolation of *rhizobacteria* from surface sterilized root nodules has been reported. To explore how these *rhizobacteria* enter root hairs and colonize root nodules, we hypothesized that host specific *rhizobia* initiate the signaling process to form infection thread (IT), which is invaded by *rhizobacteria* to breach host specificity. To experimentally prove the hypothesis, fluorescently tagged predominant *rhizobacteria Pseudomonas fluorescens* and a facultative aerobe *Klebsiella pneumoniae* were coinoculated with native host nodulating rhizobia *Ensifer adhaerens* to *Vigna radiata* seedlings and root hair infection was monitored at 5 days post inoculation (DPI) using confocal microscope. and *K. pneumoniae* adhered to surface and base of root hairs and failed to enter root hairs independently but successfully colonized root hairs when coinoculated with *E. adhaerens*. Recovery and confirmation of inoculated tagged strains through confocal laser scanning microscopy and 16S rDNA sequencing validated nodule occupancy by test *rhizobacteria* at 50 DPI. This is the first study that addresses the fundamental question of how non-rhizobia invade root nodules and experimentally proves that non-rhizobia invade IT of host nodulating native rhizobial strain and colocalize in root nodules. We also isolated eight non-rhizobia with predominance of gram positive *Paenibacillus* and *Bacillus* among other gram-negative species of *Klebsiella*, *Ensifer*, *Agrobacterium*, *Blastobacter*, *Dyadobacter* and *Chitinophaga* from field grown *V. radiata* root nodules.

maharshipandya140985@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Microbiological and physicochemical mapping of waste and wastewater from the hospital structures of the Ibn Sina Hospital of Rabat, Morocco**Mohammed El Morhit**

Mohammed V University, Morocco

The main health risks associated with the use of water in a health facility should be identified and evaluated to determine how to implement and control these risks. This study focused on 39 questions and on the assessment of the level of bacteriological and physicochemical pollution contained in the effluent wastewater in ISH. These samples were collected during the months between 2014 and 2016 with five fractions of times. In our study, on total of 51 staff questioned, 80% of doctors and nursing staff are aware of the risks that waste can cause to their health. The only means of protection used by nursing staff is the wearing of gloves (60%). 39.58% of staff felt that the sorting at source is not respected by the healthcare staff. Almost 94% of the staff did not receive training and 76% felt that sensitization activities were insufficient. Most of services do not have an intermediate storage room that meets standards. The COD/BOD ratio was 2.57 determines the possibility and the effectiveness of the degradation that can be expected from a biological treatment of the oxidation. While the ratio (FC/FS=4.09) obtained that is of human origin exceeds the standards recommended by the WHO. Two gradients were found to have an SM contamination gradient of organic origin and a FMAT contamination gradient was fecal origin. Bronchitis (HHC=26.99%) and dermatosis (KHC=24.77%) are the most frequent categories of diseases in our study. They were caused by *Escherichia coli* and *Staphylococcus aureus*, which showed low frequencies of antibiotics resistance. It could have an effect on the overall management of the aquatic ecosystem and the treatment of such wastewater remains a primary solution to preserve the environment in general and public health in particular.

mohamed.morhit@um5s.net.ma

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Abundances and distribution of *Anadara* species in the intertidal zone at the Nasese shore**Muni S Goundar, Arieta T Baleivale and S N Shashtri**
Fiji National University, Fiji

Ark shells are particle-feeding bivalve mollusks of the family Arcidae. *Anadara* spp. (local Fijian name: Kaikoso) is one group of the sub-tropical ark shells. Significant, long-term decline in the abundance and size, structure of cockles, a keystone species in the intertidal habitat, is likely to represent changes to the ecological structure and probable loss of ecosystem function. The abundance and distribution of *Anadara* Sp in the Nasese shore, Suva, Fiji were studied from August to December 2016. The line transects and quadrat methods were used to study the *Anadara* species abundance and distribution at the Nasese intertidal mudflats at four sites; FIRCA, FNU Nasese Campus, Suva Grammar School and Suva Park. The species density at FNU Nasese campus was the highest density whereas Suva Grammar School has the lowest density value. Since the site 2 (FNU Nasese Campus) has the highest number of species found within the site, it also has the higher density value of 168 m². In this study, it was found that the abundances of the *Anadara* species at the Nasese shore are declining. It is suggested that resource management should be site-specific depending on the environmental conditions, apart from the general conservation strategy afforded by Marine Protected Areas (MPAs).

sangeeta1g@yahoo.com

Notes:

Joint Conference

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Application of online tools and resources on foodborne outbreaks for Microbiology instruction**Narveen Jandu**

Gannon University, USA

In recent years, there have been several newsworthy outbreaks of infectious disease agents, such as *Zika*, *Ebola* and the 2015 *Escherichia coli* O26 outbreak associated with Chipotle restaurants in the United States. During these outbreaks, numerous resources can provide the general public, faculty and students with timely, accurate, and credible information. The outbreaks associated with these microbiological infectious disease agents can and should be incorporated into ongoing microbiology courses. One way to do this is to utilize the excellent resources available from the Centers for Disease Control and Prevention (CDC) website (www.cdc.gov). The CDC website provides a wealth of resources and information on numerous current, ongoing and past outbreaks. Understandably, the CDC website can be overwhelming for new users, such as students. Students, however, can be gradually introduced to some of these resources through planned assessments that will allow students to learn both microbiology content and how to utilize online resources. Two specific online resources were selected for students to develop their understanding of foodborne outbreaks. These resources include the FOOD (Foodborne Outbreak Online Database) Tool and the Multistate Foodborne Outbreaks webpage, which are both available through the CDC website. Both resources allow users to retrieve up-to-date information on ongoing outbreaks, which allows the content in a microbiology course to be relatable to current news events. As well, students can utilize these resources to learn how to access public data, use spreadsheets, generate charts, and perform quantitative data analysis and interpretation. For teaching purposes, these resources are valuable for professors to generate figures and graphics for lectures. The utilization of real-time online data on ongoing outbreaks on infectious disease agents provides a more relatable and application based approach to understanding how infectious disease agents cause foodborne and other outbreaks.

jandu001@gannon.edu

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Effect of inoculation with phosphate solubilizing fungus on growth and nutrient uptake of wheat and mungbean plants fertilized with tri-calcium phosphate in alkaline soilsRachana Jain¹, Jyoti Saxena², Vinay Sharma³ and S N Naik¹¹Indian Institute of Technology, India²BT Kumaon Institute of Technology, India³Banasthali University, India

Thirty-two isolates were recovered from farmland soil samples of the Banasthali region, Rajasthan, India, out of which 16 showed phosphate solubilizing potential. These microorganisms were further screened based on solubilization efficiency of inorganic phosphate sources in Pikovskaya agar and broth media containing tricalcium phosphate as an insoluble source of phosphorus. Isolates S33 showed the highest phosphate solubilizing potential, and later identified as *Aspergillus tubingensis*, was selected for further work. This isolate could solubilize other inorganic forms of phosphorus (P) viz. dicalcium phosphate, ferric phosphate and Udaipur rock phosphate. The efficiency of *Aspergillus tubingensis* S33 was further studied in semi-arid soils in a pot experiment to evaluate the effects of this fungus on the enhancement of P uptake by plants, available P status in the soil, dry matter production and grain yield of wheat (*Triticum aestivum* L.) and mung bean (*Vigna radiata*). Inoculation of *A. tubingensis* S33 significantly improved dry matter and grain yield in both crops. In general, there was a significant improvement in P uptake by plants and extractable P status in the soil. The results suggested that *A. tubingensis* S33 can play an important role in wheat and mungbean growth promotion and increase in soil available P.

rachana_nbs@yahoo.co.in

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Sustainability of mine after mine closure: A case study**Saba Shirin, Akhilesh Kumar Yadav and Aarif Jamal**
Indian Institute of Technology (BHU), India

Mining is an important activity which provides not only metal, minerals, and coal for various consuming industries, but also generate employment in and around the mine. As a result of the exhaust of property from mine, severe crises for a survival of local population project dependent people around the mine develops. It has no economic sustainability of mine after the closure of mine project. Therefore, its opportunity to increase economic sustainability of mine for the local population. In the current scenario of sustainability of mine after exhausted of the property becoming an important issue of discussion all over the world. The basic concept of mining i.e. extracting and depleting a non-renewable stock or resources-implies an unsustainable activity. Therefore, mineral production is now greater than ever before in history. The challenges, on the other hand, are that ore grades continue to decline, mine waste volumes increase and the future of energy or water could provide real constraints to the future growth of the mining industries across the world. The continuing debate on incorporating sustainable development into the mining industry, however, does not include systematic, long term data on mining. Data for aspects such as economic resources, ore grades, solid waste burden (tailings and waste rock) and other imputes and outputs (energy, water, chemical, pollutant emissions), are fundamental evidence for any assessment or quantification of the environmental sustainability of mining. In this paper, an attempt has been made to increase the economic sustainability of the mine with the concept of wealth from waste and also cover the overburden of a coal mine was investigated and proved suitable as a filling material, grit material, recovery of sand and clay for making bricks. The detail is discussed in the paper.

sabashirin83@gmail.com

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Ciliate-zooplankton epibiosis in Africa's largest estuarine lakeSalome Jones¹, Andre Vosloo¹, Nicola Carrasco¹ and Renzo Perissinotto^{1,2}¹University of Kwazulu-Natal, South Africa²Nelson Mandela Metropolitan University, South Africa

Epibiosis is a symbiotic association between two organisms, in which one species (epibiont) uses the surface of another species (host) as an attachment substrate. Although not traditionally regarded as parasitic, recent studies have revealed that epibionts mainly have a deleterious effect on zooplankton hosts. In spite of its widespread occurrence, there are very few studies in Africa that address epibiosis in the aquatic environment, particularly that involving zooplankton as hosts. Epibiotic ciliates are often found in zooplankton samples from the St Lucia estuary, Africa's largest estuarine lake. A study was conducted in the St Lucia Estuary between 2014 and 2016 to determine the identity of the epibiotic ciliates, their species-specific association with the zooplankton of St Lucia, their effect on their hosts and also the environmental conditions that promote their proliferation. The results of this study revealed that the epibiotic ciliates are the *peritrich*. *Epistylis* sp., are specific for the dominant copepod *Pseudodiaptomus stuhlmanni*, and have a negative association with the fitness of this copepod. *Epistylis* sp. also appears to be favoured by salinities below 20 and turbid conditions, with the latter only holding true if there is a high organic matter content. The ecological implications of ciliate-zooplankton epibiosis in the St Lucia estuary and similar systems will be discussed.

salomemandyjn@gmail.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Microbial life on Mars: The effect of the Martian environment on *Halobacterium salinarum* NRC-1Sebastian Sjoestroem^{1,2}, Stefan Leuko¹, Per-Åke Nygren² and Petra Rettberg¹¹German Aerospace Center, Germany²Royal Institute of Technology, Sweden

Astrobiology is the study of life, its origin, evolution and distribution in the universe. Some of the best models for extraterrestrial life studies are found in extreme environments on Earth that are similar, in certain aspects to the terrains on Mars. Climate models show compatibility with transient, night-time liquid brines, shifting the focus to halophilic extremophiles. This project was designed to simulate the harsh climate of Mars and study how the archaeon *Halobacterium salinarum* sp. NRC-1 copes with radiation, temperature changes, desiccation and different brines compositions adapted from. Solar UV: 200-400 nm was emulated at the German Aerospace Center DLR, in Cologne, Germany and *Hbt. salinarum* was exposed in liquid Martian brine analogues (MBAs) as well as desiccated, and survival was determined. The effects of diurnal-nocturnal cycling were investigated for temperature alternations; 4, -20°C and -80°C. In the MBAs that supported survival of *Hbt. salinarum*, desiccation was the most harmful of the tested Martian conditions. However the desiccated samples had an increase in relative survival of diurnal-nocturnal cycling compared to liquid MBAs. The survival following irradiance was dependent on the brines with F10, (200-400 nm)-values ranging from 14-360 kJ-m⁻² and some of the MBAs displayed protective qualities. Adding yeast extract, as organic nutrient to the brines also proved to be harmful to the organism. *Hbt. salinarum* is unlikely to thrive on Mars, as simulated in this project, but their long-term survival is not unimaginable. Halophiles are robust and should be considered both in questions of colonization- and unwanted contamination of Mars.

Ssjoestro@kth.se

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Impact of grazing management practices on rangeland condition in the Eastern Cape grassland biomes of South Africa**Solomon T Beyene and Charlene Mudita**
University of Fort Hare, RSA

In South Africa rangelands, two main livestock production and management practices can be recognized: communal-continuous (CG) and commercial-rotational (RG) ranching. After decades of trials, another management planning known as Holistic Planned Grazing (HPG) has been suggested and its recognition is growing. This planning allows much higher animal density stay over a short time period and moves to mimic nature. The current study evaluated variations in vegetation and soil characteristics in response to the three grazing management systems in the grassland biomes of South Africa. From each management practice, two farms were selected giving a total of six farms. Each farm was divided into three landscape units namely; bottomlands, slope and uplands. Three 100 m by 50 m transects were established in each landscape unit to record vegetation and soil data. Results showed that farms under HPG had higher ($P<0.05$) basal cover, followed by RS, whereas CG had the lowest. Biomass production was highest ($P<0.05$) in RG and lowest in CG grazing system. Communal grazing sites were characterized by high abundance grass species that have low grazing and ecological benefits, where as the dominant grasses under RG and HPG were strong perennials with high grazing values. Aggregate stability, Particulate organic matter, Organic carbon and many soil nutrients were relatively higher in soils collected from RG followed by HPG. Landscape greatly influenced many vegetation and soil variables and this appeared to interact significantly with grazing management. Significant variations for several vegetation and soil variables between the land management practices suggest that differences in grazing pressure and system might be the primary cause. This supports the equilibrium models that stress the greatest role of livestock density and movement on soil and vegetation dynamics. We conclude from this study that RG and HPG may promote soil and vegetation stability, whereas CG resulted in poor soil and vegetation conditions. Therefore, we recommend studies to evaluate best practices based on RG and HPG principles under communal rangeland system.

teferabeyenesolomon@yahoo.com

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Coastal regime shifts: Responses of community structure, multi-functionality of coastal wetlands to *Spartina alterniflora* invasion**Xu Ma**

Beijing Normal University (BNU), China

Spartina alterniflora invasion is a part of global change. The landwards and seawards invasion in coastal wetlands may lead to the reduction of the *Suaeda salsa* and sea grass habitat. The landscape pattern, community structure, species diversity and multi-functionality of ecosystem were changed greatly in the typical estuarine wetland-Yellow River Delta, China. There were significant differences in patches' structure and ecosystem functions from the sea to the land, and there was a significant difference of community structure, species diversity and ecosystem function between the inner and outer regions of patches. Due to density-structured effect, the community structure, species diversity and ecosystem multi-functionality represent gradient differences. The evaluation framework and index system of the impacts of *Spartina alterniflora* on ecosystem multi-functionality were studied, including biological and soil carbon sequestration, N mineralization, phosphorus retention index, primary productivity, decomposition, sedimentary and so on. *Spartina alterniflora* habitat has a significant contribution to the conservation of species diversity and ecosystem multi-functionality. It is possibly a new idea or perspective of evaluating the impact of *Spartina alterniflora* invasion from the perspective of ecosystem multi-functionality.

maxudongfang@163.com

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Tidal wetland changes in face of coastal squeeze on the coasts of Yellow River Delta in China**Ying Man and Baoshan Cui**

Beijing Normal University, People's Republic of China

Coastal wetlands can adapt themselves for accelerating sea level rise (SLR) through landward migration and upland recolonization, but the hardening coastal defense and associated intensive coastal land reclamation may hinder even interrupt the process of landward migration. This so-called "coastal squeeze" effects led by SLR and coastal reclamation may result in the fragmentation, erosion even crumbling of coastal wetland ecosystem. The coastal wetlands in Yellow River Delta are characterized with global biodiversity hotspot (e.g., migratory shorebirds) and enormous ecosystem services such as carbon storage, water purification and coastal defence, where the coastal squeeze is also prominent. The effect of coastal squeeze has produced prominent erosion of coastal habitats and coastal defense, bringing about greater ecological and socioeconomic risk to the coastal region in Yellow River Delta. Therefore, how to enhance multiply coastal ecosystem services and provide ecologically resilient spaces for the coastal wetlands to facilitate the ecological adaptation to the coastal squeeze is confronted as a key issue for the sustainable coastal management in Yellow River Delta. This article spatially quantified the effects of coastal squeeze and discerned the hotspots and vulnerable sites across the coastal region (Figure 1.). Also, SLAMM (Sea Level Affecting Marsh Model) has been employed to model the landward migration process and recolonization pattern under ICPP RCP 4.5-defined scenarios of SRL. The potential inland habitats for landward moveable coastal wetlands in response to the SLR scenarios have been selected by reviewing and combining the modelling results of SLAMM and CSI. Finally, the multi-functional coastal ecological security pattern has been established. SRL-adaptation for coastal wetlands can be used to regulate on-going and planned coastal reclamation programme and guild adaptive and sustainable coastal management in Yellow River Delta.

201531180035@mail.bnu.edu.cn

Notes:

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Efficiency of an upflow anaerobic sludge blanket reactor treating potato starch processing wastewater and related process kinetics, functional microbial community and sludge morphologyPhilip Antwi¹, Jianzheng Li¹, Portia Opoku Boadi¹, Jia Meng¹, Frank Koblah Quashie¹, Xin Wang¹, Nanqi Ren¹ and Gerardo Buelna²¹Harbin Institute of Technology, China²Centre de Recherche Industrielle du Québec, Canada

Herein, an upflow anaerobic sludge blanket reactor was employed to treat potato starch processing wastewater and the efficacy, kinetics, microbial diversity and morphology of sludge granules were investigated. When organic loading rate (OLR) ranging from 2.70 to 13.27 kgCOD/m³.d was implemented with various hydraulic retention times (72h, 48h and 36h), COD removal could reach 92.0-97.7%. Highest COD removal (97.7%) was noticed when OLR was 3.65 kgCOD/m³.d, but had declined to 92.0% when OLR was elevated to 13.27 kgCOD/m³.d. Methane and biogas production increased from 0.48 to 2.97 L/L.d and 0.90 to 4.28 L/L.d, respectively. Kinetics and predictions by modified-Gompertz model agreed better with experimental data as opposed to first-order kinetic model. Functional population with highest abundance was Chloroflexi (28.91%) followed by Euryarchaeota (22.13%), Firmicutes (16.7%), Proteobacteria (16.25%) and Bacteroidetes (7.73%). Compared with top sludge, tightly-bound extracellular polymeric substances was high within bottom and middle sludge. Morphology was predominantly Methanosaeta-like cells, Methanosarcina-like cells, rods and cocci colonies.

kobbyjean@yahoo.co.uk
philipantwi@stu.hit.edu.cn

International Conference on

ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY

&

International Conference on

ECOLOGY AND ECOSYSTEMS

September 18-20, 2017 Toronto, Canada

Drug resistant pattern of bacterial isolates in infected wounds at Bahir Dar Regional Health Research Laboratory Center, Northwest EthiopiaDerese Hailu¹, Awoke Derbie², Daniel Mekonin², wondmagegn Mulu², Yesuf Adem², Alem Tsega¹ and Fantahun Biadlegne²¹Bahir Dar Regional Health Research Laboratory Center, Ethiopia²Bahir Dar University, Ethiopia

Background: An increased antibiotic resistance of bacterial isolates from wound infections is a major therapeutic challenge for clinicians. The aim of this study was to describe bacterial isolates that caused wound infection and determine their current antimicrobial susceptibility pattern.

Methods: We analyzed the records of 380 wound swab samples that have been cultured at Bahir Dar regional health research laboratory from January, 2013 to December, 2015. Swabs from different wound types were collected aseptically. Antimicrobial susceptibility test was performed using disc diffusion technique as per the standard protocol. Bacteriological and socio-demographic data were collected using a standard data collection format. The data was cleared, entered and analyzed for descriptive statistics using SPSS version 20.

Result: The overall bacterial isolation rate in this study was at 61.6% (234/380). About 123 (52.6%) of the isolates were gram positive cocci and 111 (47.4%) were gram negative rods. The predominant isolate was *S. aureus* at 100 (42.7%) followed by *E. coli* 33 (14.1%), *P. aeruginosa* 26 (11.1%) and *S. pyogenes* 23 (9.8%). The overall rate of multidrug resistant (MDR) bacterial pathogens that caused wound infection was 54.7%. Out of these, 35 (15.1%) of the isolates were resistant to more than five antibiotics. Ampicillin had the highest resistance rate at 85.9% among gram negative isolates. Whereas the highest resistance rate among gram positive isolates was in erythromycin at 31.1%.

Conclusion: In the studied region, higher frequency of mono and multi drug resistance of bacterial pathogens that caused wound infection was documented. Thus, a new method to the causative agent and antimicrobial susceptibility testing surveillance in areas where there is no culture facility is needed to assist the health professionals in the selection of appropriate antibiotics.

deresehailu86@gmail.com

Notes: