

International Conference on  
ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY  
&  
International Conference on  
ECOLOGY, ECOSYSTEMS AND CONSERVATION BIOLOGY  
July 11-12, 2018 | Toronto, Canada

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# Scientific Tracks & Abstracts

Day 1

International Conference on

# ENVIRONMENTAL MICROBIOLOGY & MICROBIAL ECOLOGY

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# ECOLOGY, ECOSYSTEMS & CONSERVATION BIOLOGY

July 11-12, 2018 | Toronto, Canada

## **The effect of biological microorganism products on maize vegetation and productivity**

**Ernestas Zaleckas**

Aleksandras Stulginskis University, Lithuania

Agriculture is becoming more and more intense and farmers forget to take care of the soil, restore its fertility. One of the options is to use biological products because different microorganisms are vital components of the soil. They mobilize nutrients, produce plant growth regulators, protect plants from phytopathogens, improve soil structure and degrade xenobiotic compounds. The use of biological products results in the higher biomass and seedling height of maize. It also improves organic matter content and total nitrogen(N) in the soil. The aim of the experiment—to find out the effectiveness of the biological product for maize growth in three different soils: sandy loam, clay loam, and black soil/natural peat substrate. Maize seeds were treated in three different ways: 1–control (not treated), 2–treated with the biological product, 3–treated with the biological product, fulvic, humic acids, 4–treated with the biological product, amino acids, and seaweed extract. The research results have revealed differences in maize green mass, root mass, height, chlorophyll index, area of the leaves and dry matter. Maize green mass was higher when seeds were treated with the biological product, fulvic and humic acids, therefore, root mass was higher when seeds were treated with the biological product, amino acids, and seaweed extract. It is noticed, that the use of biological compounds has a positive influence on maize chlorophyll index and yield.

### **Biography**

Ernestas Zaleckas has completed his PhD at the age of 29 years from Lithuanian University of Agriculture and postdoctoral studies from Kaunas Technology University. He has published more than 25 papers in scientific journals.

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## LiDAR data analysis with Fusion/LDV for individual tree measurement

**Hiromi Shiota**

Graduate School of Kyoto Prefectural University, Japan

**Introduction:** In recent years, many analyses have been conducted on the vertical structure of the forest using airborne LiDAR data. To analyze LiDAR data, analysis software is developed in Europe and USA. The forest conditions are quite differences between these countries and Japan. In this study, we used Fusion/LiDAR Data Viewer (LDV) software that developed in the USA, as a tool to analyze LiDAR data. The purpose of this study is to verify the efficacy of Fusion/LDV in Japanese forest management, in terms of function, accuracy, and type of output obtained using this software.

**Methods:** The verification parameters used in this study were tree height, crown base height (CBH), and crown width (CW). We used three data sources-automatically extracted Fusion/LDV data, manually measured Fusion/LDV data, and field survey data. In order to compare the obtained data, we used scatter diagram analysis, root-mean-square error (RMSE), and differences from three different types of field survey data.

**Results:** The study findings confirmed relatively high precision of both the automatic and manual measurements by Fusion/LDV in estimating tree height. The inclination of linear regression was over 0.9 in two survey areas. The results of R square were over 0.7. But while neither the measurement of CBH nor that of CW had such precision. The inclination of linear regression was near zero or minus values.

**Conclusion:** For individual tree height measurement Fusion/LDV was very useful when a tree has a clear peak, it was available enough in Japanese forest environment.

### Biography

Hiromi Shiota has started his research for forestry management for 4 years after retirement from an IT vender. He is interested in Airborne Laser Scan of Remote Sensing technology. He is now trying to measure average tree height in wide area by using large size ALS data with Area Based Approach. To operate large data, for example, merge or divide data, change data format, or smoothing like these. He thinks, Fusion/LDV that developed by USDA is an excellent tool to analysis LiDAR data. However, he is 65 years old now, but he keeps studying with the will.

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## Antiproliferative anthracycline pink red-like pigments produced by new bacterial soil strains identified as *Streptomyces coelicoflavus* and bioactivity of other compounds

M. Menggad<sup>1</sup>, A Mouslim, H Ayoubi, N Habti, S Menggad<sup>2</sup>, S Moujabbir and E. Affar

<sup>1</sup>University Hassan II Casablanca, Morocco

<sup>2</sup>University of Montreal, Canada

Among 29 soil isolated actinomycetes, five new strains MFB11, MFB20, MFB21, MFB23 and MFB24 showed an intracellular hydrophobic pink red-like pigment production. These pigments present similar physio-chemical characteristics with anthracycline antibiotics of prodigiosin family. Crud extract and prepared fractions were tested by MTT on mice cancer cell line as well on human cancer cell line. The results indicated an important antiproliferative effect of the different strain pigments on the two organism cell types. Human cells were more sensitive to the pigments and presented different antiproliferative effect profiles. FACs analysis of this antiproliferative effect on cancer human cells line showed a cell cycle phase arrests at G1 and S. Nevertheless, negative antibacterial assay, Thin-layer chromatography (TLC) and interaction with organic solvents analysis of these pigments revealed their difference from known anthracycline antibiotics. Morphological, biochemical and gene coding 16S RNA sequence analysis allowed identification of the producer strains as *Streptomyces coelicoflavus*; known to produce important aminoglycoside antibiotics and other bioactive compounds but not anthracycline red-like pigments. Otherwise, two other strains produced water soluble Gram positive antibiotics and chloroform soluble bioactive compounds with strong and dramatic apoptotic antiproliferative activity as indicated by MTT and their cell cycle phase arrests at G0/G1 and G2.

### Biography

Mohammed Menggad is a Professor in Hassan-II University of Casablanca, Morocco. He has completed Graduate diploma from Mohammed-V University, Rabat, Morocco. Postgraduate diploma and PhD from Paris XI University, France. He has experiences at Max-Planck-Institut fur Zellbiologie, Rosenh of Ladenburg, Germany and at Queen's University, Department of Biomedical and Molecular Sciences, Kingston, Canada.

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## Forecasting the carbon dioxide emission of china based on the brain storm optimisation algorithms

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<sup>1</sup>Jiangsu University, Zhenjiang, China

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This paper seeks to forecast the carbon emission of China using the BrainStorm Optimisation Algorithms (BSO). In recent years, the concentration of carbon dioxide emission of China is on the ascendancy. Yet, accurate prediction of air quality remains at the fringes of current studies. Though, several researchers have attempted to predict air quality of most countries; most studies adopted approaches varying from ordinary linear regressions, multivariate regressions, fuzzy logic to conventional swarm intelligence, which mostly leads to but inaccurate predictions owing to imminent inherent parameters problems in these approaches. Hence, the vital need for accurate prediction of air quality into the future whilst using robust techniques. This is to aid in monitoring and implementing of precise policies and reforms, tailored specifically for China. Our study, therefore, employed an augmented Brainstorm optimization, originally proposed by Yushi S. for the prediction. Our study utilized the following paramount variables in recent literature on energy-environmental pollution nexus: energy consumption, economic growth, international trade and the carbon dioxide emission. Our findings revealed that the proposed Brainstorm optimization offer better prediction of the air quality in China when compared with the original BSO and the ARIMA model as it had better convergence speed, adaptive value, and better diagnostic error.

### Biography

Kofi Baah Boamah, a distinguished Researcher with over 12 years teaching and research experience in the field of Energy Economics, Environmental Management, International Economics, International Trade, Applied Econometrics, Growth and Development, Foreign Direct Investments and Health Economics. He has several published articles in top Journals. He is currently with the Computational Centre for Social Sciences- School of Management, Jiangsu University, pursuing his PhD Studies.

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## ***Pichia kudriavzevii* NN/SG II potential yeast strain isolated from Gora- a rice based fermented beer traditionally prepared by the indigenous Koloï tribes of Tripura**

**Nandita Nath, Sushanta Ghosh, Lovely Rahaman, Senthil Kumar Nachimuthu and Bipin Kumar Sharma**  
Tripura University, India

**G**ora a rice based fermented beer traditionally prepared by the Koloï tribes of Tripura using indigenous brewing techniques. The present study aimed to isolate and identify the indigenous yeast flora of 'Gora' and evaluate its fermentation ability comparison with a industrial strain. Culture dependent approaches- phenotypic characterization were done to investigate the responsible yeast species and identified as *Pichia kudriavzevii* which was further confirmed by the molecular identification using partial 18S rRNA gene sequence. The reducing and non-reducing sugar content of 'Gora' was  $1.19 \pm 0.999$  and  $1.04 \pm 0.010$  mg/ml respectively. Whereas the carbohydrate, protein and Total alcohol content of the rice beer 'Gora' was  $0.56 \pm 0.101$ ,  $11.96 \pm 0.001$  mg/ml and  $6.40 \pm 0.008$  % v/v. respectively. The comparative analysis of the isolate *Pichia kudriavzevii* NN/SG II with the industrial strains in laboratory condition shows significant similarities in the nutritional parameters and alcohol percentages with the industrial strain. This is the first scientific investigation of indigenous yeast strain of 'Gora' from this region may provide sufficient background and potentiality for its scientific and logical appreciation and promoting the microbial legacy of indigenous alcoholic beverage as an immaterial cultural heritage for future as well as small scale commercialization for rural livelihood.

### **Biography**

Nandita Nath is a Research Scholar at the Tripura University, India. 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.

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## Isolation and identification of predominant bacterial isolates infecting urinary tract

Marwa M Elmaghrabi and Hanan A Ghozlan  
Alexandria University, Egypt

In this study, bacterial isolates of the most common urinary tract infection of 100 patients were investigated. Patients comprised of equal gender and 50 patients were above 40 y/o and 50 were under 40 y/o. Only 55 patients were infected of whom 63.6% females and 36.4% males, and among them, 66% were above 40 y/o, and 44% were under 40 y/o. The dipstick test revealed 24% were positive for leukocytes, 13% were positive for nitrite, 14% were positive for both leukocyte and nitrite. Phase contrast microscopy revealed 15% were positive for pyuria, and 34% were positive for bacteriuria. Morphological description leukocytosis and bacteriuria colonies have grown on cultured on MacConkey and Blood agar plates were achieved, where 64 bacterial strains and four fungal strains were identified. Based on Gram staining and cell shapes, isolates were grouped into three categories; Gram (+) cocci, Gram (-) coccobacilli, and Gram (-) bacilli, and analyzed using SYSTAT® program. Following cluster analysis, a representative strain of each cluster was selected for identification using VITEK® system. Results showed eight groups of isolates; 28 *E. coli*, 9 *Klebsiella pneumoniae*, 6 *Pseudomonas aeruginosa*, 6 *Proteus mirabilis*, 5 *Staphylococcus aureus*, 4 *Enterococcus faecalis*, 4 *Morganella morganii* and 2 *Pseudomonas fluorescens*. Large cells of *Candida albicans* were also identified. Results indicated that the most predominant uropathogenic was *E. coli* as it was found in 43.7% of the isolates followed by *Klebsiella Pneumoniae* 14.1%. Both *Pseudomonas aeruginosa* and *Proteus mirabilis* were represented in 9.4% of the isolates while *Staphylococcus aureus* was recorded in 7.8% of the samples. *Enterococcus faecalis* and *Morganella morganii* were represented in 6.2% of the isolates, however, only 3.2% was recorded for *Pseudomonas fluorescens*.

### Biography

Marwa M Elmaghrabi is currently a permanent researcher at Stem Cells and Tissue Culture Labs, Faculty of Medicine, Alexandria University, a healthcare and quality advisor at Canadian Academy of Sciences, Egypt. She has MSc in Microbiology (2012), Faculty of Science, Egypt. She accumulated 8-years of experience in quality and infection control, and appointed to a number of key jobs; ISO 9001:2015 Lead Auditor, quality manager (2015-2017) and quality and infection control manager (2013-2015) in Madina Fertility group, quality-specialist at Medical Research Institute, Alexandria University, 2015-2017, and senior quality assurance specialist and internal auditor at Hassab-Labs Company, 2010-2013. She participated in a number of regional and international conferences and as a member of Organizing Committee of Microbial Ecology-2018 pre-conference workshop. She contributed to PAN-African and electronic network project as a broadcasting lecturer. She served as a member of the Egyptian Syndicate of Scientific professions, and Arab QOSH of safety professionals' experts.

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## Estimation of soil carbon in the moist temperate forests: A case study of Galiyat Pakistan

**Saeeda Yousaf**

University of Peshawar, Pakistan

The soil plays an important role in capturing carbon from the atmosphere also known as Carbon Sequestration. The current study was conducted to estimate soil carbon in the moist temperate forests of Galiyat, Pakistan. Samples plots (n=15) were randomly laid out in moist temperate forests of the study area which covered most of the area of the Galies Forest Division. Soil samples were collected from 0 to 15 cm and 15 to 30 cm depth with the help of a soil auger. In each sample plot data was collected on slopes, aspect, crown cover, elevation, soil bulk density, and soil organic matter and soil carbon. In each sample, moisture content (%) and ashes (g) were determined. Sample plots taken were located on different slopes with mostly on moderate slopes. The majority of the sample plots was located on North Eastern aspects and was at an elevation greater than 2000 m. On the basis of crown cover, the sample plots were located in open, medium dense and dense forests. The value of organic matter in the soil samples having depth from 0 to 15cm (3.642 g) and 15 to 30 cm depth (3.178 g) were found. The value of soil carbon for soil having depth of 0 to 15cm (2.112 g) and soil having depth of 15 to 30 cm (1.843 g) was calculated. The bulk density in the soil sample was calculated having depth 0 to 15 cm (1.462 g/cm<sup>3</sup>) and 15 to 30 cm (1.337 g/cm<sup>3</sup>). Moisture content for the soil having depth of 0 to 15cm (6.195 %) and soil having depth of 15 to 30 cm (6.205 %) was observed and the ashes value for soil having depth of 0 to 15cm (94.279 g) and soil having depth of 15 to 30 cm (95.087 g) was determined.

### Biography

Soon after graduation, she joined World Wide Fund for Nature-Pakistan (WWF) where she worked for almost 4 years since 1999-2003 on several projects related to education and natural resource management, etc. She worked with mountainous area's women in Gilgit, Ishkoman valley, Hisper Valley, Chitral, Kashmir, Sudhan Gali, Swat, Mahudand, and Kalam etc. After that, she joined the University of Peshawar in September 2003 as a lecturer and in 2009 promoted to Assistant Professor. During this time she had worked on a variety of projects related to global environmental and climate change, Natural Resource Management, water pollution, and soil pollution etc., funded by HEC. To date, she has 22 publications in peer-reviewed journals. She has been teaching several courses of Environmental Sciences since 2003 and has supervised 83 research groups of graduates and undergraduates level students' and 10 MS/M.Phil students mostly female students in the field of Environmental Sciences.

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## **Chlorpyrifos-induced alterations in cell surface topography, total protein content and optimization of key growth and degradation regulators of *Bacillus* spp.**

**Shweta N, Jadhav SK and Keshavkant S**  
Pt. Ravishankar Shukla University, India

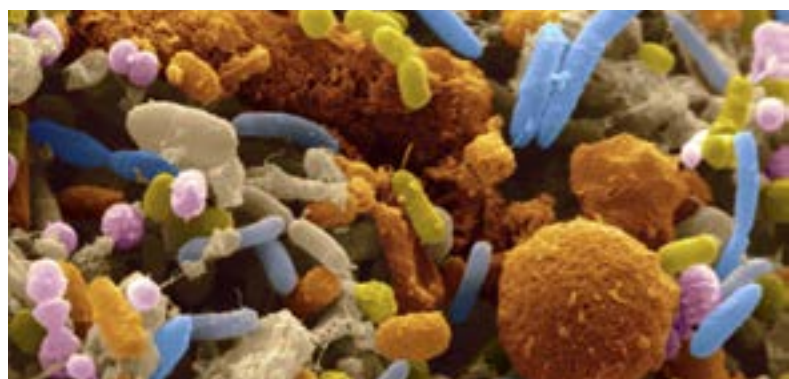
Intensive and modern agriculture is extensively and purely based on the usage of pesticides for enhancing the crop productivity. In India, due to warm and humid climatic condition in most of the parts the agricultural productivity is under the major threat of variety of insects and pests. Hence, the highest consumption of pesticides is in agricultural sector. Organophosphates are one of the widely and globally used pesticides due to its easy availability and low economic price. Continuous and repeated use of organophosphates has become a major threat to soil environment due to its low water solubility, longer persistence and high soil adsorption coefficient. The present study emphasized on isolation and molecular authentication of organophosphate tolerant bacterial strains from paddy growing field using stimulated natural environment procedure. Molecular characterization identified the bacterial strains to be the member of *Bacillus* and *Streptomyces* genera. Scanning electron microscopy of one of the best tolerant bacteria revealed alterations in their cell surface as well as in their length and width. Total protein content was determined in the control sample and organophosphate (Chlorpyrifos) treated bacterial cells and accumulated data indicated a significant impact of applied concentrations of Chlorpyrifos on content of total protein predicting the expression of Chlorpyrifos responsive enzymes. Moreover, optimization of key growth regulators for the bacterial cell revealed that the 0.25% of Fructose and Yeast Extract was the optimum carbon and nitrogen source as well as 27.5°C and 8.0 were the best temperature and pH. Even, induction of Chlorpyrifos degrading enzymes was highest at pH 8.0 and temperature 30°C. Thus overall study suggested that the bacterium would be efficient and can be studied further in detail to be used for bioremediation of Chlorpyrifos contaminated sites.

### **Biography**

Shweta Nistala recently defended for Ph.D degree from School of Studies in Biotechnology, Pt. Ravishankar Shukla University, Raipur, India. She is working as an environmental microbiologist and has expertise regarding isolation of the microbes using the modern cultivation approaches. She has been testing the microbes for biodegradation purpose of pesticides for achieving sustainability and also optimizing the growth and degradation conditions for the bacteria. She has been working in this particular area since three years. Achievements of isolating positive and responsive pollutant (especially pesticides) degrading bacteria have been made. In relation to this, she has published one paper and others are in communication.

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# Scientific Tracks & Abstracts

## Day 2

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## The remediation of drought stress under VAM inoculation through proline chemical transformation action

**Rafia Azmat**

University of Karachi, Pakistan

The enhanced drought tolerance under arbuscular mycorrhizal (AM) inoculation and normal growth, discussed in this article which was found to be very rewarding due to the activity of photoreceptors. The photoreceptor action under drought stress in dual symbiosis showed not only the high photosynthetic bustle but also provide information about the broad range of developmental and physiological responses. The pot experiment conducted in a natural environment where drought condition was observed twice a week via regular irrigation with water up to 12 months. Plant analysis showed the highest concentration of water, hydrogen peroxide, carotenoids and proline in both leaves and roots with a large surface area of leaves followed by regular growth. It suggested that the elevated concentration of hydrogen peroxide ( $0.04 \pm 0.0 \mu\text{mol}(\text{gFW})^{-1}$ ) coupled with singlet oxygen species was the main modified molecular mechanism which was operative in drought condition. The accretion of proline under drought stress ( $32.3 \pm 0.3 \mu\text{g}/\text{ml}$ ) was related to the highest branching pattern of young leaves and the chemical transformation of reactive oxygen species (ROS) including  $\text{H}_2\text{O}_2$  and  $3\text{O}_2$  into effective molecules like water and triplet molecular oxygen. The higher contents of carotenoids ( $5.0 \pm 1.2 \text{ mg}(\text{gFW})^{-1}$ ) in drought over control ( $4.8 \pm 1.6 \text{ mg}(\text{gFW})^{-1}$ ) and AM plant ( $4.9 \pm 1.2 \text{ mg}(\text{gFW})^{-1}$ ) was found to be supportive in the conversion of singlet oxygen into triplet one. The formation of water molecule via OH radical transformation related to the rehydration capability of proline in a drought condition followed by the transmutation of singlet oxygen into triplet oxygen couple with the absorption of  $\text{CO}_2$  was the internal molecular mechanism for normal the growth.

### Biography

Rafia Azmat has completed here PhD at the age of 42 years from University of Karachi leading to postdoctoral studies from same University. She is the Professor in photochemistry in Department of chemistry in University of Karachi. She has published more than 125 papers in reputed journals, 5 chapters, 3 books and has been serving as an editorial board member of repute journals. She has puffed 4 patents and 3 patents atricles.

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## Potential threat of New Delhi Metallo-Beta-Lactamase-1, multi drug resistant and extensive drug resistant (XDR) to achieve the millennium development goals (MGD's)

**Taha Nazir**

Intellectual Consortium of Drug Discovery and Technology Development Inc., Canada

There are  $\geq 2'000'000$  people get resistance against antibiotics every year in United State. CDC has graded bacterial resistance as worst reason of deaths and hospitalizations in US. The superbugs' include MDR/ XDR, MRSA, CRE, NDM-1, C-Diff, *Neisseria gonorrhoea*, CRE (*Carbapenem resistant Enterobacteriaceae*) and VRE (*Vancomycin-resistant Enterococcus*) are most common threats for successful control of infectious diseases. Antimicrobial resistance is a serious threat that induced new resistance mechanics, emerged and spread throughout the world. Approximately 450 000 new MDR-TB cases were identified during 2012. XDR-TB strains identified in 92 different countries. Worldwide mostly the resistance seen in pneumonia, urinary tract infections and bloodstream. The expansion of worldwide travel and trade has prompted the transmission of resistant superbug strains. The resistance is an evolutionary and natural phenomenon, that may be activated and transmitted to next generation. Inappropriate use (overuse, underuse or misuse) of antimicrobials drives the development of resistance. Appropriate pharmaceutical care may potentially reduce the resistance. The sub-therapeutic regimens in veterinary practice may produce and transmit resistant to humans. Substandard clinical practice and poor infection control may produce resistant superbugs. The admitted patients are good reservoirs, carriers and source of infection transmission. The current antibiotics are losing their efficacy against resistant superbugs. Moreover, a declined trend to investigate for new antibiotics, insufficient research to collect the information of resistant strains and unavailability of vaccines may posed potential threats. Moreover, the hazards from resistance superbugs are increasing and demanded an urgent action. The multifarious problems of resistance superbugs need a collective effort. Thus, WHO is calling for prompt action to stop the transmission of antibiotic resistance by introducing a 6 point policy package. Thus, in September 2000, the United Nations Millennium Declaration was signed. Eight major MDG's goals designed by the United Nations (UN). The UN members were agreed to attain these objectives by the year 2015. The world leaders were convinced to fight against poverty, hunger, environmental degradation, disease, discrimination against women and illiteracy. The designing, approval and enforcement of appropriate drug regulations may potentially help to optimize the pharmacotherapy and mitigate the emergence of antibiotic resistance. A prospective jurisprudential support is necessary to assure standard pharmaceutical care. The pharmacy professional and drug experts are expected to deliver their exact scientific and professional role of prescription reviewing, patient counseling, therapeutical drug monitoring, bio-safety, clinical services and pharmaceutical care instead of current irrelevant, non-technical, administrative and clerical work. Appropriate clinical and pharmaceutical care will minimized the resistance against. The pharmacovigilance, ADR's, pharmacoeconomics and pharmacometrics should also be implicated to achieve the MDG's in SEA countries.

### Biography

Taha Nazir has multiple expertise with advanced knowledge of microbiology, pharmacology, and molecular biology. He was awarded the PhD (Microbiology) degree in 2010. Whereas, he got his post-graduation in Pharmacology from University of Agriculture and graduation in pharmacy from the University of Punjab. He has more than twenty year's research, academic and professional experience. Additionally, his research interest includes the drug designing, novel formulations, cell pathology, epidemiologies, and biotechnology. Moreover, He has worked at prestigious research, academic and professional including Associate Professor, Associate Dean (Pharmaceutical Sciences), Chairman Board of Directors and President (Pharmacist Federation). He has worked with ICDDT Inc., Saskatoon SK, Drug Store Pharmacy Calgary AB, Medicine Shoppe Pharmacy Saskatoon SK, and the University of Lahore and the University of Sargodha. Additionally, he has presided, chaired and participated in so many scientific/ academic/ professional conferences/ workshops and/ or training sessions. Currently, He is associated with ICDDT Inc. Canada as Head - Microbiology, Chemical Pathology and Molecular Biology Research Group, ICDDT Inc., Canada. Moreover, he performs a variety of role to develop partnerships between academic and practical skills. He has compiled six different books entitled Applied Pharmacotherapy, Applied Molecular Cell Biology, Clinical and Pharmaceutical Management of Diseases and Practical Manual of Pharmacology & Therapeutics. He has authored more than 30 research articles published in reputed and accredited scientific journals.

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## The functional response of the predator *Phytoseiulus persimilis* (Athias-Henriot) on different densities of *Tetranychus urticae* Koch on two cultivars of rose

Mostafa Haghani<sup>1</sup>, Faezeh Malek-Hoseini, Amin Sedaratian-Jahromi, Ali Hamid, and Valiollah Baniameri<sup>2</sup>

<sup>1</sup>Yasouj University, Iran

<sup>2</sup>Iranian Research Institute of Plant Protection, Tehran Iran

Rose flower *Rosa* spp. due to its beauty, stability, long flowering period and the presence of different cultivars, it has especially importance. That the two-spotted spider mite *Tetranychus urticae* Koch is one of the most important pests of this ornamental plant. Today, the use of predators of the Phytoseiidae family has become widespread as the biological control of this pest and among these predators can be mentioned to the *Phytoseiulus persimilis* (Athias-Henriot). One of the important factors for assessing the biological effects of a natural enemy is its enemy's functional response to its prey different densities. In this study, the functional response of this predator was tested on different densities of two-spotted spider mites. The densities of 2, 4, 8, 16, 32, 64 and 128, of the immature stages of the two-spotted spider mite on two varieties of Angelina and Samurai under laboratory conditions were used. Based on the logistic equation, the type of functional response was determined on two varieties of type II. Functional response parameters, handling time ( $T_h$ ) and attack rate ( $a$ ) of this predator in two varieties were not significantly different. The handling time for this predator on the Angelina variety and the Samurai variety were estimated  $0.4292 \pm 0.0587$  and  $0.41917 \pm 0.0597$  h, respectively, and attack rate for this predator on Angelina and Samurai cultivars was  $0.0239 \pm 0.0068$  and  $0.0246 \pm 0.0028$ , h<sup>-1</sup> respectively. According to the estimated results of this experiment, it can be concluded that this predator on the Angelina and Samurai varieties could have a good biological efficiency, for control of the two-spotted spider mite. Our finding can be used in providing population prediction models and efficiency assessment of *P. persimilis* for biological control of *T. urticae*.

### Biography

I am an applied Entomologist with a strong interest in Population Ecology, Biological Control, Thermal Biology, Tritrophic Interactions, Integrated Pest Management and Cop Loss Assessment of insects and mites pests especially on protected crops (vegetable crops and ornamental flowers). I have enjoyed interactions with other researchers in many areas, especially the Population Ecology and IPM, which have given me opportunities to learn about these fields. I have done research on biological control of vegetable leaf miner using parasitoid wasps *Diglyphus isaea* and *Hemiptarsenus zilahisebessi* under field and greenhouse condition and efficiency of egg parasitoid *Trichogramma embryophagum* on laboratory hosts.

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## Effect of diazotrophic biofertilizers in combination with urea on growth and biomass production of sugarcane

Hossain GMA<sup>1</sup>, Solaiman ARM<sup>2</sup>, Karim AJM S, Rahman GKMM and Mia MAB

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Bangabandhu Sheikh Mujibur Rahman Agricultural University, Bangladesh

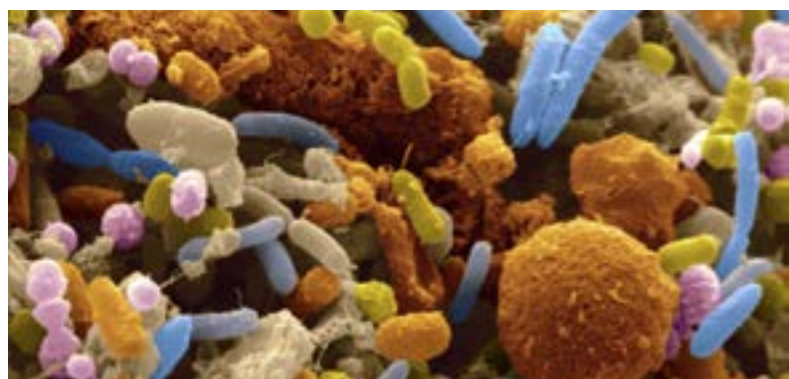
A pot experiment was conducted at Bangabandhu Sheikh Mujibur Rahman Agricultural University, Gazipur, Bangladesh for six months during December 2012 to June 2013 with a view to assessing the comparative performance of diazotrophic biofertilizers on growth and biomass yield of sugarcane. Carrier materials i.e. CMC-1.28 gL<sup>-1</sup>+Starch-1.02 gL<sup>-1</sup>+ MgO (1% w/w) was used to prepare liquid biofertilizers with diazotrophs viz; *Bacillus cereus*, *Acinetobacter calcoaceticus*, and *Rhizobium* spp. These biofertilizers along with four levels of nitrogen as urea i.e. no nitrogen, 25% N of RFD, 50% N of RFD and 100% N of RFD were used to conduct the experiment. The experiment was laid out in a Completely Randomized Design with three replications. Results revealed that treatment receiving 50% N of RFD along with *Bacillus cereus* inoculation gave the highest significant increase in all the growth parameters, biomass yield and nutrient content of sugarcane plant. The highest number of tiller per hill (8.67), number of leaves (19.33), LAI (7.57), leaf greenness (34.17), total chlorophyll (0.366 mg 100 ml<sup>-1</sup>), cane height (3.47 m), cane diameter (8.22 cm), number of internode (20.33) and biomass yield (403.44 g hill<sup>-1</sup>) were obtained in treatment receiving 50% N of RFD + *Bacillus cereus* inoculation. The highest concentrations of N (2.50%), P (0.30%), K (1.61 %), S (0.28 %), Ca (0.37 %), Mg(0.25 %), Zn (44.00 ppm) and Mn (48.00 ppm) in sugarcane leaf also found from the same treatment. Biomass yield increase of sugarcane over 100% N of RFD was 0.86% with the same treatment.

### Biography

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Young Researchers Forum

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## **A model for the ecological collapse of easter island caused by economic price fixing**

**William F Basener<sup>1</sup> and Wesley J Basener<sup>2</sup>**

<sup>1</sup>Rochester Institute of Technology, USA

<sup>2</sup>Piedmont Valley Community College, USA

**E**aster Island, called Rapa Nui by its inhabitants, is an extremely isolated population, ideally suited for study as an ecosystem in isolation. Archeological evidence suggests that an initial group of around 50 people arrived on the island around 400 AD, at which time the island had an abundant supply of large palm trees supporting a vibrant ecosystem. The population grew in size and sophistication, creating the enormous and artistically complex statues for which the island is famous. By the 1700s, when the island was visited by explorers, the island was devoid of trees and the population seemed too small and poorly equipped to have built the statues. There have been many proposed 'causes' for the boom and crash of this population, including ecocide, genocide, and invasive species. In this presentation, we review some of the previous models and propose an ecological economics model showing that if the price of trees were effectively fixed, then the supply and demand interactions could have caused a boom in population, complete exhaustion of the trees, and subsequent collapse of the population.

### **Biography**

Wesley Basener is a student researcher at the Piedmont Valley Community College. His areas of expertise include population modeling, population genetics, topology, data mining, and dynamical systems.

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## **The role of economic, policy, and ecological factors in estimating the value of carbon stocks in the Meme Conservation Area, South West Region, Cameroon**

**Tatiane Flore Mayo Ngouno**  
Kumba City Council, Cameroon

Old growth forest in existing protected areas store more carbon than restored forests or plantations. Carbon storage in such forests has economic value independent of additionality, offering opportunities for policymakers to ensure their maintenance, and inclusion in climate change mitigation strategies. Old growth forests of the Meme Conservation Area (MCA), South West Region, Cameroon, though protected, face external stressors such as hydrological alterations because of flooding control structures and agriculture impacts. Moreover, decreased funding threatens the restoration of the Meme Conservation Area's old growth forest. We evaluate several economic and ecological challenges confronting the economic valuation of total (vegetation plus soil) organic carbon (TOC) storage in the MCA old growth forest. Evaluated TOC stockpiling for this forested wetland ranges begins from 70 to 537 Mg C/ha and is higher than values revealed for tropical, boreal, and mild woodlands. We calculate the average abatement cost of C specific for MCA forest to value the TOC from 20–30.4 billion CFA. The valuation of the stored/legacy carbon is based on the: 1) ecogeomorphic attributes, 2) regional socio-economic milieu, and 3) status of the MCA old growth forest as a protected area. The assessment of C storage estimates and its economic value can change public perception about how this regulating ecosystem service supports human well-being and numerous economic activities. This perception, in turn, can contribute to future policy changes such that the MCA, the largest old growth forest conservation area in Cameroon, can be included as a potential alternative in climate change mitigation strategies.

### **Biography**

Tatiane Flore Mayo Ngouno is the Projects and Policy Analyst of the city of Kumba, the largest municipality in the South West Region of Cameroon. She started her career as a Microprojects Associate at City of Kumba. After immense progress, she received sponsorship to study International Economics at the Ternopil National Economics University, Ukraine. She obtained a Bachelors' degree in International Economics in June 2017. She then returned to city council of Kumba where she is presently working.

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## Comparison of bacterial communities in complete gliadin-degraded sourdough (khamir) samples and non-degraded samples

Hafiz Arbab Sakandar<sup>a,b,c</sup>, Stan Kubow<sup>b</sup>, Weining Huang<sup>c</sup> and Muhammad Imran<sup>a</sup>

<sup>a</sup>Microbiology Department, Faculty of Biological Sciences, Quaid-I-Azam University, Pakistan

<sup>b</sup>McGill University, Canada

<sup>c</sup>Jiangnan University, China

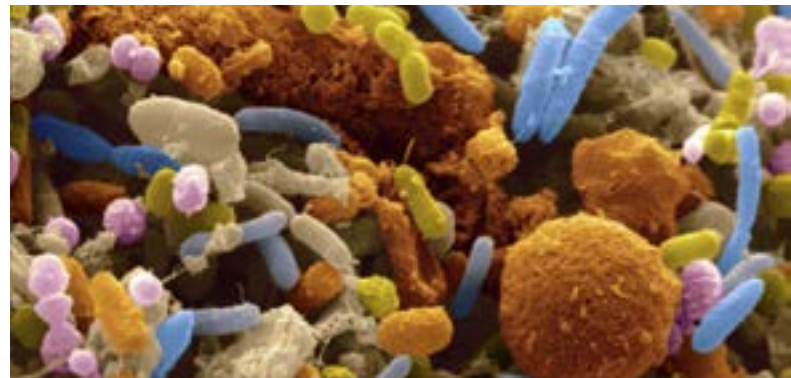
This study was conducted to investigate the comparison of bacterial communities in gliadin-degrading sourdough (Khamir) samples (SD2) and non-gluten degrading samples (SD1). Sixty locally fermented sourdough samples were collected from various cities of Pakistan. Gliadin degraded samples were analyzed by Fourier Transform Infrared Spectroscopy (FTIR) analysis and selected for metagenomic analysis by Illumina Miseq plate-form. It was observed that Proteobacteria (50.65%) and Actinobacteria (6.70%) phyla were in more abundance as compared to Firmicutes (42.53%) in SD2 while Firmicutes (83.44) were in more abundance in SD1 than Proteobacteria (14.97 %). 16S ribosomal RNA sequence also disclosed that Lactobacillus genera are the core genera in SD1 and SD2, 52.13 and 33.73%, respectively. However, second most abundant genera in SD1 and SD2 was Weisella (27.15%) and Psychrobacter (21.53%), respective. It was revealed that SD2 and SD1 samples have 15 and 9 different genera, respectively while 52 genera in common were present in both. Shannon and Simpson's indices indicated that SD2 had more diversity compared to SD1. Different clustering of genera was observed in SD1 and SD2 by Principal Component Analysis (PCA) graph. Contrarily, sourdough samples had different bacterial communities as compared to previous studies of other authors. This study can be helpful to apply specific bacteria consortia to develop gliadin free food product.

### Biography

Hafiz Arbab Sakandar has his expertise in Food Microbiology and Nutrition. He did his masters from University of Agriculture, Faisalabad, Pakistan and PhD from Quaid-i-Azam University, Islamabad, Pakistan. He also worked as Research Scholar at McGill University, Canada. Currently he is working as Research Assistant at Jiangnan University, China. He has worked on the sourdough with special focus on Gliadin Toxicity and its effect on Caco-2 monolayers. He has published many papers in reputed peer reviewed national and international journals.

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# Video Presentations

## Day 2

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## **Functional folk food concept based on consumption of ethnical products and epigenetic algorithm for personal nutrition calculation for implementation and exploitation by European Union citizens**

**Nadiya Boyko**

Uzhhorod National University, Ukraine

**Statement of the Problem:** To strengthen European citizens to make dietary choices as the healthy diet, which is sustainable and affordable using local goods that are produced in the environmentally responsible way for further improving food systems.

**Methodology & Theoretical Orientation:** Clinical trials, cohort studies, *in vitro* and *in vivo* experiments (cells, animal models: CNV vs. GF and k.o. mice, etc.), mathematical modeling, IT tools.

**Findings:** We are currently testing is the personalized nutrition algorithm (PNA). However, it is being tested only for specific diseases, which limits the use of those approaches for personalized nutrition to only those cases. FENIX proposes to exploit an easy-to-use coherent tool to make recommendations for PN requirements that meet the precise needs of EU citizens. Proposed by FENIX tool is based on measurements and an innovative bioinformatics approach for interpretation of individual microbiome data with other relevant and crucial factors (evidence-based and correlated biomarkers, calculating age, gender and indicating personal health status, personal nutritional requirements, food composition data, lifestyle specificity, cultural preferences, environment conditions) and also consider the available source and analytical characteristics of ethnic foods and innovative food processing approach of further individualisation proposed for local farmers and food producers.

**Conclusion & Significance:** All NCDs, allergies, other so-called “metabolic disorders” correlate with human microbiome status. Normal microbiome depends on the region where a person lives. In fact, the project presents a new way of the understanding microbiome – function. FENIX will also consider the origin of food taking into account its nutritional value and unique composition since different food affects different people in different ways, as well as the different origin of one product, affect the same person differently.

### **Biography**

Nadiya Boyko has defended her PhD in 1994 and doctor degree in 2010. From 2000 until 2005 she occupied sabbatical Research Fellow position in Laboratory of Mucosal Immunology in University of Pennsylvania, USA. She is permanently working as professor at the Uzhhorod National University, and occupied following positions: Director of the R&D Centre of Molecular Microbiology and Mucosal Immunology; Vice-President and CSO of CLS in Slovakia and co-founder and CEO of Ediens LLC. Research interests are: P4 medicine, personalized nutrition, pharmabiotics, human microbiome, noncommunicable diseases; food safety, knowledge transfer. Co-establisher of Ukrainian and Slovak Technology Platforms “Agro-Food”; experienced stakeholder manager with links to industry, academia and researchers in Europe.

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## Acute febrile illness in India– Dengue or Typhoid or both?

Ashima Chugh, Ankur Gupta, Sandhya Bansal and Sanjeev Bansal  
Bansal Hospital, India

**Introduction:** Developing nations share the highest burden of dengue or typhoid due to expeditious population growth, and restrained safe water and health systems. Laboratory diagnosis of enteric fever includes Blood culture, Stool Culture, and Serological test. Blood culture is accounted as the gold standard. Easy availability and ubiquitous use of antibiotics make it frequently difficult to isolate the organism from blood culture. Widal test is the commonest test in developing countries.

**Materials and Methods:** 50 serum specimens of the patients presented with acute febrile illness & dengue NS1 positive were taken in the year 2017 at Bansal Hospital, New Delhi. All these patients conferred with acute febrile illness and with the symptoms common to both typhoid and dengue. The tests applied to the actual diagnosis were a Widal test, typhi dot, NS1 Ag and dengue serology (IgG and IgM).

**Results:** Of the 50 febrile sera samples tested here all were NS1 positive. Case Fatality Rate (CFR) was zero. Around 50% of patients were less than 18 years. 32 NS1 positive patients had platelet counts less than 50000 (64%) but none of them showed dribble in platelets below 20000. Widal positive cases were 7 out of 50 (14%) dengue positive patients. 5 out of 7 patients were typhidot IgM positive (71.4 %). 6 widal positive cases were less than 14 years of age. Samples from these 7 widal positive cases were repeated for next day to see the increasing titer. 2 out of 7 patients which were typhidot positive showed increasing titers (28.57%).

**Conclusion:** While diagnosing a dual infection of typhoid and dengue, we should rely on 2 or 3 screening tests for typhoid. Increasing titers should be retained in mind. Both dengue and typhoid may lead to many complications if not diagnosed and handled promptly and can be lethal.

### Biography

Ashima chugh is a gold medalist & consultant pathologist in one of the multispecialty hospitals in Delhi. She has completed her senior residency from GB Pant Hospital, New Delhi. She has keen interest in clinical pathology & microbiology. Her research papers have been published in national & international journals.

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## Assessment of top soils for mcpa utilizing bacteria isolated from oil palm plantation and open dumpsite

Bello Osagie IO, Ekhaise FO and Obayagbona ON  
University of Benin, Nigeria

**Statement of the Problem:** MCPA (4-Chloro-2-Methylphenoxyacetic acid), one of the organochlorine herbicides is widely used in agriculture for weed control in crops and pastures. Though it has contributed immensely in boosting agricultural produce, its accumulation in the soil may pose potential environmental and health hazards. This work attempts to evaluate the biodegradative potentials of indigenous MCPA utilizing bacteria in top soils of oil palm plantation and open dumpsite as a natural way to control toxic accumulation of MCPA.

**Methodology and Theoretical Orientation:** Standard bacteriological methods were utilized in the isolation of heterotrophic bacterial flora, physico-chemical procedures were used for the evaluation of soil profile while molecular techniques targeting the 16S rRNA of isolates were utilized in characterization of MCPA utilizing bacteria.

**Findings:** The mean total bacterial counts from the sampled sites were not significantly different ( $P > 0.05$ ). The growth profile of the axenic and the mixed bacterial cultures were evaluated using parameters such as pH, optical density, chloride release and bacterial count for 15 days. Of the Six (6) bacterial species characterized as *Bacillus atrophaeus*, *B. pumilis*, *B. licheniformis*, *B. subtilis*, *Achromobacter xylosoxidans* and *Pseudomonas mendocina*, only three (3) species (*Bacillus licheniformis*, *Achromobacter xylosoxidans* and *Pseudomonas mendocina*) exhibited biodegradative potential for MCPA in the soil samples. Physico-chemical analysis of soil samples revealed slightly acidic (5.2-6.9) and sandy (89.0-95.0) profile, with ammonia-nitrogen and phosphate values ranging from 6.12 mg/kg to 17.80 mg/kg and 19.09 mg/kg to 56.23 mg/kg respectively. The biodegradation of MCPA was greatly enhanced with the use of consortium of the isolates as indicated by the comparatively higher values of mean colony counts and chloride release recorded in flasks which contained glucose as extra energy and carbon source.

### Biography

Idowu Bello-Osagie is a Lecturer in the Department of Microbiology, Faculty of Life sciences, University of Benin. Her research interest spans the Environmental sector of Microbiology with focus on water quality, management and technology. She has worked extensively on biodegradation and enhanced remediation of endocrine disrupting compounds (bisphenol A) as well as herbicide degrading bacteria. She has evaluated the ecological implications of anthropogenic pollutants in soil and aquatic ecosystems as well as antibiograms and mutagenicity assessment of hospital waste water. Hundreds of students have been positively mentored over years of serving as academic advisor and teacher. She has actively participated in various local, national and international conferences, presenting scientific papers as necessary.

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