

2022
December, 12
Webinar

International E-Conference on
Animal science and Veterinary Medicine
December 12-13, 2022 | WEBINAR

**Joint
International
E-Conference On
2022**



**Agriculture,
Aquaculture &
Veterinary Medicine
Animal Science**



Joint E-Conference 2022

December
12, 2022

Day-1 (December, 12)

Webinar

9:00–9:10 **Introduction**

ORAL PRESENTATIONS

9:10–9:40 Title: Autologous vaccines and recurrent pyoderma in dogs: an effective approach?
Dr. Giulio Severi, Experimental Zooprofilactic Institute of Umbria and Marche region "Togo Rosati" (IZSUM) - Italy

POSTER PRESENTATIONS

9:40–10:10 Title: Potential role of dietary chitosan nanoparticles against immunosuppression, inflammation, oxidative stress, and histopathological alterations induced by pendimethalin toxicity in Nile tilapia
Dr. Gehad Elsaid Elshopakey, Mansoura University, Faculty of Veterinary Medicine, Egypt

ORAL PRESENTATIONS

10:10–10:40 Title: Università degli Studi della Campania "Luigi Vanvitelli" 8100 Caserta, Italy
Dr. Alessandra Santillo, New Evidence on the role of D-Aspartic acid in steroidogenesis and spermatogenesis: DDO knockout and DDO knockin mice as experimental models

10:40–11:10 Title: Mesenchymal stem cell therapy for feline asthma
Amanda hill, Faculty of Jaguariúna, Brazil

11:10–11:40 Title: Development of antimicrobial drug with ozonated oil
Mrs. Gabriele Slavinskiene, Lithuanian University of Health Sciences, Small Animal Clinic of Dr. L. Kriaučeliūnas, Lithuania

11:40–12:10 Title: Zeolite effects on soil water content on spinach (*Spinacia oleracea* L.) growth and yield: first results
Stella Lovelli, School of Agriculture, Forest, Food and Environmental Sciences, University of Basilicata, Viale dell'Ateneo Lucano 20, 85100 Potenza, Italy

Joint E-Conference 2022

December
12, 2022

Day-1 (December, 12)

- 12:10-12:40** Title: Role of Sesame Meal for improvement of Growth Performance and other indices in Common Carp fingerlings
Muhammad Mudassar Shahzad, Department of Zoology, Division of Science and Technology, University of Education, Lahore, Pakistan

POSTER PRESENTATIONS

- 12:40-13:10** Title: Carbon nanotubes combat methicillin-resistant *Staphylococcus aureus* in vitro
Xiaoye Liu, Animal Science and Technology College, Beijing University of Agriculture, No.7 Beinong Road, Changping, Beijing 102206, China.

ORAL PRESENTATIONS

- 13:10-13:40** Title: Tomato seed priming with water-soluble polysaccharides from *Jania adhaerens* for the control of soil-borne pathogens
Hillary Righini, Department of Agricultural and Food Sciences, Alma Mater Studiorum, University of Bologna, Viale G. Fanin 40, 40127 Bologna, Italy.
- 13:40-14:10** Title: Design, development and performance evaluation of zone disc tiller drill for maize crop production in Pakistan in theme of your research topic
Muhammad Faheem, Department of Farm Machinery and Power, University of Agriculture, Faisalabad 38000, Pakistan
- 14:10-14:40** Title: Effects of Slope Gradient on Runoff and Sediment Yield on Machine-Induced Compacted Soil in Temperate Forests
Sara Karami, Master Graduated Tehran University, Iran
- 14:40-15:10** Title: Halloysite nanotube with silver and tannic acid: A sustainable Nano-enabled antibacterial combination therapy (NeACT) for application in animal agriculture
Satwik Majumder, Department of Food Science and Agricultural Chemistry, Canada.
- 15:10-15:35** Title: Sustainable extra virgin olive oil, a development perspective for the Italian sector
Luca Lombardo¹, ¹Council for Agricultural Research and Economics Research Centre for Olive, Fruit and Citrus Crops, 87036 Rende, Italy



Dr. Giulio Severi

Giulio Severi, Carmela Ligotti, Martina Pellegrini, Claudia Colabella, Antonella Di Paolo, Massimo Bugatti, Silvia Cardaioli and Monica Cagiola

Experimental Zooprofilactic Institute of Umbria and Marche region
"Togo Rosati" (IZSUM) - Italy

"Autologous vaccines and recurrent pyoderma in dogs: an effective approach?"

Abstract:

Bacterial pyoderma is common in small animal practice. Autogenous and autologous staphylococcal vaccines are commonly cited as a treatment for recurrent pyoderma in dogs, but little is known about their effectiveness. On the other hand, canine pyoderma remains one of the most common diseases diagnosed in small animal practice, often leading to the prescription of antimicrobials and often recurring due to undiagnosed or uncontrolled underlying primary triggers. Furthermore, antimicrobial resistance poses a serious threat to human and animal health. Veterinary prescription of antimicrobial drugs is obviously under enquiry for both livestock and companion animals. The use of antibiotics in animals, particularly critically important antimicrobials (CIAs), is one of the most worrying aspects. The research, development, registration and production of new innovative vaccines is essential to combat animal and human diseases and, at the same time, it's essential to reduce the use of antibiotics to effectively combat antimicrobial resistance (AMR). This statement is extremely true and likewise strategic for the future of the veterinary vaccine production department of Experimental Zooprofilactic Institute of Umbria and Marche region "Togo Rosati" (IZSUM). Immunomodulation or immunization using staphylococcal vaccines has been explored and studied for several years and finally the development of a new vaccination protocol combined with the production of a new generation autovaccine made in the IZSUM pharma laboratories could represent the key to effectively counteract the disease in companion animals. This Research is carried out with the funding of the Italian Ministry of Health - IZSUM112021RC.

Biography:

Giulio Severi is a doctor in veterinary medicine and has been working in the Pharmaceutical Laboratory of Experimental Zooprofilactic Institute of Umbria and Marche region "Togo Rosati" (IZSUM) for over twenty years. Grew up in Italy and received his Veterinary Medicine degree from the University of Perugia in 2000. He has achieved various titles being the 2004 Specialization in Animal Health, breeding and zootechnical productions, 2006 University Master in Biotechnology, 2010 PhD Increase in Zootechnical Productions and Pathology of Income Animals and 2016 Master in Pharmaceutical Medical Management.



Dr. Gehad Elsaid Elshopakey

Mansoura University / Faculty of Veterinary Medicine/Mansoura, Egypt

"Potential role of dietary chitosan nanoparticles against immunosuppression, inflammation, oxidative stress, and histopathological alterations induced by pendimethalin toxicity in Nile tilapia"

Abstract:

A 21-days feeding screening period was conducted to highlight the protective efficacy of dietary chitosan nanoparticles (CSNPs) on pendimethalin (PD)-induced toxicity in Nile tilapia (*Oreochromis niloticus*). Hematology, non-specific immune response, the antioxidative enzymes [superoxide dismutase (SOD) and catalase (CAT), glutathione reduced (GSH), and glutathione peroxidase (GPx)] in the liver and anterior kidney, changes of pro-inflammatory cytokine genes [interleukins-8 (IL-8), interleukins-1 β (IL-1 β), and tumor necrosis- α (TNF- α)] in the anterior kidney and histopathological alterations were assessed. Fish (50 $\pm$ 7.5 g) were randomly assigned into four groups (Three replicates), the first group served as the negative control and fed on the control diet only, and the second group served as the positive control and fed on the control diet supplemented with CSNPs (1 g kg⁻¹ diet). The two other groups were exposed to 1/10 96-h LC50 PD (0.5 mg L⁻¹) in rearing water and simultaneously fed the control diet alone or supplemented with CSNPs (1 g kg⁻¹ diet), respectively. Fish were fed on the experimental diets twice a day for 21 days. The results revealed that PD exposure caused a significant decline in the survival rate of the Nile tilapia, as well as in most of the hematological indices, respiratory burst activity, phagocytic activity, total immunoglobulin levels, lysozyme, and bactericidal activity. Additionally, PD toxicity markedly suppressed most of the antioxidative enzymatic activities in both tissues together with upregulation of immune genes (IL-8 and TNF- α); however, IL-1 β expression remained unaffected. The histopathological results revealed marked pathological changes in spleen, liver and intestine with a notable decrease of intestinal goblet cells in PD-exposed groups. Conversely, CSNPs exerted protective effects through improving the above mentioned parameters. Thus, CSNPs supplementation exhibited defensive effects against PD toxicity in Nile tilapia that might provide an insight into the promising role of CSNPs as a potential immunomodulatory feed additive for tilapia in aquaculture.

Biography:

My name is Gehad Elsaid Elshopakey. I had born in Mansoura in 1988. I received my higher education at Mansoura University in Egypt, where I studied at the Faculty of Veterinary Medicine. I awarded my philosophy degree in veterinary sciences in 2010. Now, I am a lecturer of clinical pathology at the Faculty of Veterinary Medicine, Mansoura University. I have traveled to Japan, Miyazaki University, where I finished my Ph.D. My research interest is in clinical pathology science, focusing on hematological, immunological, and inflammatory mediators' changes in both diseased and healthy animals, especially aquaculture



Dr. Alessandra Santillo

Alessandra Santillo, Maria Maddalena Di Fiore, Sara Falvo, Debora Latino, Gabriella Chieffi Baccari

Dipartimento di Scienze e Tecnologie Ambientali, Biologiche e Farmaceutiche, Università degli Studi della Campania "Luigi Vanvitelli" 8100 Caserta, Italy

"New Evidence on the role of D-Aspartic acid in steroidogenesis and spermatogenesis: DDO knockout and DDO knockin mice as experimental models"

Abstract:

Experimental studies performed in rats showed that D-aspartic acid (D-Asp) acts at all levels of the hypothalamus-pituitary-testis axis, suggesting that this D-amino acid plays a key role in reproductive processes. D-Asp regulates the synthesis and release of testosterone by promoting the release of gonadotropin-releasing hormone (GnRH) in the hypothalamus and luteinizing hormone (LH) in the pituitary. In vitro experiments carried out on isolated Leydig cells, GC-1 spermatogonia and GC-2 spermatocytes demonstrated that D-Asp also exerts a direct effect on both steroidogenesis and spermatogenesis. To elucidate the endocrine role of D-Asp in the reproductive processes, two models of mutant mice with targeted deletion (Ddo^{-/-}) or overexpression (Ddoov) of D-aspartate oxidase, a peroxisomal flavoprotein which catalyzes the deaminative oxidation of D-Asp, have been used. One-month-old Ddo^{-/-} mice showed a dramatic increase of D-Asp levels and higher levels of serum testosterone as well as a more active spermatogenesis than wild type. On the contrary, in one-month-old Ddoov mice a dramatic reduction of D-Asp levels and a significant decrease in serum testosterone levels occurred. Furthermore, histological and morphometrical data showed an altered testicular organization in one-month-old Ddoov. However, in both Ddo^{-/-} and Ddoov mutant mice the difference in serum testosterone levels as compared to wild type disappeared with age increasing, suggesting a role for D-Asp in the steroidogenesis and spermatogenesis during the developmental phase of the testis.

Biography:

Alessandra Santillo graduated with honours in Biology Sciences at University of Campania "L. Vanvitelli". 2008: PhD Degree in Computational Biology. 2008-2020: Researcher of Comparative Anatomy and Cytology, Department of Environmental, Biological and Pharmaceutical Sciences and Technologies (DiSTABiF), University of Campania "L. Vanvitelli". Since 2020: Associate Professor of Comparative Anatomy and Cytology (DiSTABiF). Her research lines mainly concern issues of Comparative Endocrinology, in particular of vertebrate reproduction. In the context of the aforementioned issues, Prof. Santillo mainly studies the role of the amino acid D-aspartate in steroidogenesis and spermatogenesis in mammalian and non-mammalian vertebrates. The scientific activity of Prof. Santillo is documented by 60 publications on international journals, with impact factor and indexed by Scopus and/or Web of Science.



Amanda hill

Pamella Anderson de Oliveira, Clara Passos Maeda, Priscila Barbalho Bianchi, Amanda Baracho Trindade Hill

DFaculty of Jaguariúna, Brazil, CellTech- Stem Cell Technologies, Brazil

"Mesenchymal stem cell therapy for feline asthma"

Abstarct:

Asthma is one of the most common respiratory diseases in cats, with dyspnea being one of its typical complications, due to the inflammation of the posterior respiratory tract. Felines are the only domesticated species that present asthma similarly to humans in terms of type I hypersensitivity and the narrowing of inflamed airways. Treatment for asthma aims to reduce airway inflammation and prevent and/or reduce the frequency and intensity of episodes of respiratory distress. This condition is conventionally treated through the use of bronchodilators and corticosteroids due to asthma's chronic nature. As such, the investigation of new therapeutic strategies is essential for the health and general well-being of asthma patients. The objective of this article is to report a case study of a feline with chronic asthma that was treated with mesenchymal stem cells. This cell type plays a therapeutic role by secreting bioactive trophic and immunomodulatory factors. A seven year old cat had been diagnosed with chronic asthma two years prior to this study and was being treated with bronchodilators and corticosteroids. The patient received three intramuscular applications of mesenchymal stem cells at 30 day intervals. After cell therapy, the patient was able to cease bronchodilator and corticosteroid use and also showed a significant improvement in quality of life, leading the authors to conclude that the treatment was effective.

Biography:

PhD, MSc, DMV Amanda Baracho Trindade Hill is currently a professor at Max Planck University and P&D director at CellTech- Stem Cell Technologies in Brazil. Her research expertise includes stem cell biology, tissue engineering, 3D stem cell culture, molecular biology, developmental biology and reproduction.

She has published work in Frontiers in Cell and Developmental Biology, Stem Cell Research and Therapy, Cell Proliferation, Tissue and Cell, Journal of Visualized Experiments, and is the author of a book.

Research Interests: stem cell biology, tissue engineering, 3D stem cell culture, molecular biology, developmental biology and reproduction.



Mrs. Gabriele Slavinskiene

Gabrielė Slavinskienė, Marija Ivaškienė, Gintaras Daunoras,
Aidas Grigonis

Lithuanian University of Health Sciences, Small Animal Clinic
of Dr. L. Kriaučeliūnas, Lithuania

“Development of antimicrobial drug with ozonated oil”

Abstract:

The objective of this trial was to model an emulsion with ozonated oil (OO) for veterinary use which would be stable and acceptable to an animal. To accomplish that poloxamer 407, propylene glycol and emulsifiers span 40, span 60, tween 20, tween 80 were used. The highly oxidised oils with peroxide value of ≥ 222.5 meqO₂/kg and acid value of ≥ 3.65 mg KOH/g were the main research substances. These ozonated oils have great antimicrobial and antifungal properties which we already tested. The final goal of this research is to develop a topical medicine product with OO for the treatment of animal skin infection. Unfortunately, OO itself has some sensorial disadvantages: strong unpleasant odor, high viscosity, stickiness, difficulty to wash off. Trial was carried out by the experimental planning technique: preformulation, formulation, process study and optimization. HLB number for OO, which is 10-11, was established. However, all compositions failed to maintain a homogenous emulsion with high OO concentration. Only addition of propylene glycol helped to avoid phase separation. Oil droplet size of stable emulsions with optimal OO concentration 2.5% was <45 μ m. The pH of such emulsions was 5.13 ± 0.03 .

Poloxamer used in this research shows a tendency for emulgels with OO to become creamy, less viscous, and easily wash off. All of them stay liquid at low temperature and form a creamy gel at room temperature. Decrease in pH was observed with higher ozonated oil concentration in emulgels, from pH 5.6-6.99 (1% of OO) to 3.14 – 4.50 (40% of OO).

Biography:

Gabrielė Slavinskienė is a 3rd year PhD student at Lithuanian University of Health Sciences. Her PhD thesis topic is ‘Development of pharmaceutical dosage forms with ozonated oils for animal skin infection treatment’. She is also a lecturer and teaches General and Clinical Veterinary Pharmacology to Veterinary Medicine students. Master's degree in Veterinary Medicine with honors in 2019, Lithuanian University of Health Sciences.



Stella Lovelli

Stella Lovelli, Donato Castronuovo

School of Agriculture, Forest, Food and Environmental Sciences,
University of Basilicata, Viale dell'Ateneo Lucano 20, 85100
Potenza, Italy

"Zeolite effects on soil water content on spinach (*Spinacia oleracea* L.) growth and yield: first results"

Keywords: soil moisture, available water content, amendment, zeolites, spinach

Abstract:

Zeolites, microporous crystalline aluminosilicate minerals, are used in many fields as catalysts and sorbents. In agriculture, zeolites are considered soil conditioner because they can improve soils' ability to retain water as well as their cation exchange capacity. To assess the amendment effect of a coal fly ash zeolite, previously described by Belviso et al. (2022), on spinach (*Spinacia oleracea* L. cv 'Lorelay') growth and yield, an experiment was conducted in controlled conditions at the Agronomy laboratory of the University of Basilicata. Polypropylene plastic pots having a volume of 5 liters were used to cultivate the spinach plants propagated by seeds. Pots were filled with a silty-loam soil, previously air-dried and passed through a 2-mm to have 2 experimental treatments: 1) silty-loam soil plus zeolite at a percentage of 1% (Zeo 1) and 2) silty-loam soil without zeolite as control (Zeo 0). To monitor moisture content of the soil, Watermark probes were installed in pots. During the experiment, reading the watermark data, plants were watered to restore the field capacity. On plants, greenness index of leaves were measured by using a spad meter and gas exchange parameters were measured using a LI-6400 portable photosynthesis system. At the end of the trial, per each pot, some measurements were conducted on plants to have the leaf area, the fresh and dry weight, and the dry matter content. Our results confirmed the capacity of zeolite to hold water improving the ability of the soil to be moister. Moreover, dry matter content and greenness index of leaves of plants cultivated on the Zeo1 soil were higher than the control ones.

Biography:

Stella Lovelli, Associate professor / School of Agriculture, Forest, Food and Environmental Sciences, University of Basilicata, Potenza (Italy), I'm an Associate Professor and teach at my university two courses: Irrigation and Sustainable crop systems. I have over 15 years of experience as a researcher in agronomy. My scientific research deals with measurement and estimation of crop evapotranspiration; impact of climate change on crop evapotranspiration; weed physiology and biology; effect of salinity on crop physiology. I'm a member of the Editorial Advisory Board of Agricultural Water Management (Elsevier, from 2010-present) and Archives of Agronomy and Soil Science (Taylor and Francis Group, from 2015-present). My scientific activity is proven by 48 papers on Scopus, 24 on Web of Science.



Muhammad Mudassar Shahzad

Muhammad Mudassar Shahzad, Syed Makhdoom Hussain,
Homayoun Huma Maqbool
Department of Zoology, Division of Science and Technology,
University of Education, Lahore, Pakistan.

“Role of Sesame Meal for improvement of Growth Performance and other indices in Common Carp fingerlings”

Keywords: Partial replacement, FM, growth parameters, Crude Protein Digestibility, Crude Fat Digestibility.

Abstract:

With an ever-increasing demand for fishmeal (FM) in all kinds of animal feeds, the supply chain is barely coping in keeping up with the needs. To reduce the burden and to make the feed cost effective there is a new emerging trend of partial replacement of FM with locally sourced ingredients. Pakistan being an agricultural country has lowest costs of oil seed by-products. The motive of this study was to find the impact of partial replacement of FM with sesame meal (SM) on the growth performance, nutrient digestibility, and haematological indices of *Cyprinus Carpio* fingerlings. By partially replacing at inclusion levels (0%, 10%, 20%, 30%, 40%, and 50%) of FM with SM six diets were prepared. Each group of average weight (8g) was divided into three replicates and were fed their respective feeds two times a day. Their faces samples were dried after collection, and stored for future chemical analysis. Current results showed maximum improvement in growth parameters (initial weight, weight gain %, weight gain fish-1 day-1, feed intake, SGR, and FCR) of the fingerlings fed on Sesame Meal Test Diet-III (SMTD-III), the blood indices (RBC, PLT, Hb, PCV) and the nutrient digestibility (crude protein and crude fat digestibility) were found to be the best in fingerlings fed on SMTD-III. However, the gross energy digestibility was found to be the best in fingerlings fed on SMTD-II. The findings of this study showed that if FM is replaced with SM up to 20%, it improves the growth parameters, nutrient digestibility, and haematological indices without compromising water quality and decreasing cost of feed without any supplementation.

Biography:

Gold medalist from “The Applied Zoological Society of Pakistan” (19 December 2019) in the field of Fish nutrition as best fish nutritionist researcher.

Dr. Muhammad Mudassar Shahzad was the first scholar who submitted the PhD thesis at the age of 29 from Department of Zoology, Government College University Faisalabad within permissible time period. Soon after his degree completion, he was appointed as Assistant Professor in the University of Education, Lahore, Pakistan in 2018. He is honored to win a gold medal on 19 December 2019 in the field of Fish nutrition as best fish nutritionist researcher from The Applied Zoological Society of Pakistan. He has more than 50 publications. He has completed a project “SRGP” from HEC and deve

oped a "Fish Development Lab" in Zoology Department and 15 students of MPhil/BS have completed their research from the said lab. Dr. Shahzad is actively working in the field of Fisheries focusing on using plant by-products for developing cost effective and environment friendly fish feed. He has good academic and research approach and is referee of renowned international and national journals including Pakistan Journal of Zoology, Brazilian Journal of Biology, Journal of Fisheries Science, African Journal of Food Science, Pakistan Journal of Agricultural Sciences, Journal of Plant and animal Sciences, Punjab University Journal of Zoology etc. He has organized and participated in numerous National and International conferences, Seminars, Symposiums, webinars and Workshops. He has also submitted 3 national and international research projects. He has delivered lectures in various conferences to create awareness among public about the significance of Aquaculture using plant by-products for developing cost effective and environment friendly fish feed. Dr. Shahzad is a Fish Nutrition expert and has good understanding of current issues of fish feed management. He has also developed 6 New Courses for M.Phil and PhD Students of UE Lahore.



Xiaoye Liu

Xiaohui Si, Lianyu Song, Xin Hu, Xiaomin Ren, Jing Liu, Qian zhang and Xiaoye Liu

"Carbon nanotubes combat methicillin-resistant *Staphylococcus aureus* in vitro"

Animal Science and Technology College, Beijing University of Agriculture, No.7 Beinong Road, Changping, Beijing 102206, China.

These authors contributed equally to this paper.

*Correspondence: Dr. Xiaoye Liu, email, xiaoyeliu@bua.edu.cn. ORCID: Xiaoye Liu

Keywords: Partial replacement, FM, growth parameters, Crude Protein Digestibility, Crude Fat Digestibility.

Abstract:

With an ever-increasing demand for fishmeal (FM) in all kinds of animal feeds, the supply chain is barely coping in keeping up with the needs. To reduce the burden and to make the feed cost effective there is a new emerging trend of partial replacement of FM with locally sourced ingredients. Pakistan being an agricultural country has lowest costs of oil seed by-products. The motive of this study was to find the impact of partial replacement of FM with sesame meal (SM) on the growth performance, nutrient digestibility, and haematological indices of *Cyprinus Carpio* fingerlings. By partially replacing at inclusion levels (0%, 10%, 20%, 30%, 40%, and 50%) of FM with SM six diets were prepared. Each group of average weight (8g) was divided into three replicates and were fed their respective feeds two times a day. Their faces samples were dried after collection, and stored for future chemical analysis. Current results showed maximum improvement in growth parameters (initial weight, weight gain %, weight gain fish-1 day-1, feed intake, SGR, and FCR) of the fingerlings fed on Sesame Meal Test Diet-III (SMTD-III), the blood indices (RBC, PLT, Hb, PCV) and the nutrient digestibility (crude protein and crude fat digestibility) were found to be the best in fingerlings fed on SMTD-III. However, the gross energy digestibility was found to be the best in fingerlings fed on SMTD-II. The findings of this study showed that if FM is replaced with SM up to 20%, it improves the growth parameters, nutrient digestibility, and haematological indices without compromising water quality and decreasing cost of feed without any supplementation.



Hillary Righini

Hillary Righini, Roberta Roberti, Silvia Cetrullo, Flavio Flamigni, Antera Martel Quintana, Juan Luis Gómez-Pinchetti, Ornella Francioso, Veronica Panichi, Stefano Cianchetta and Stefania Galletti

"Tomato seed priming with water-soluble polysaccharides from *Jania adhaerens* for the control of soil-borne pathogens"

Department of Agricultural and Food Sciences, Alma Mater Studiorum, University of Bologna, Viale G. Fanin 40, 40127 Bologna, Italy.

Keywords: soil-borne pathogens, red algae, water-soluble polysaccharides, plant-induced resistance; tomato; FT-IR.

Abstract:

In Europe, controlling soil-borne pathogens is difficult as synthetic products for soil treatment have been restricted. Therefore, eco-friendly alternative solutions are encouraged by international rules. Marine algae are a source of several bioactive compounds with applications in many sectors. Among these compounds, polysaccharides are well-known elicitors of plant defence responses to microorganisms and viruses, and abiotic stresses. However, more knowledge is needed on their activity against soil-borne pathogens through seed application.

Water-soluble polysaccharides (WSPs) used in this study were extracted from the red alga *Jania adhaerens* by the autoclave-assisted procedure. They were first characterized by FT-IR spectroscopy and then applied at different concentrations (0.3, 0.6 and 1.2 mg/mL) to tomato seeds for testing their activity against the soilborne pathogens *Fusarium oxysporum*, *Pythium ultimum* and *Rhizoctonia solani* and for the elicitation of plant defence responses under greenhouse conditions.

Our results showed that WSPs seed treatment in presence of the pathogens increased seedling emergence and plant development and reduced disease severity depending on the dose. The treatment without pathogen challenges differentially induced the expression of genes related to phenylpropanoid, chlorogenic acid, SAR and ISR pathways, and chitinase and β -1,3 glucanase activities, which may explain the pathogen control.

In conclusion, WSPs from *J. adhaerens* are promising bioactive compounds for the control of soil-borne pathogens to be used in sustainable agriculture.

Biography:

Hillary Righini Post-Doc, Department of Agricultural and Food Sciences (DISTAL), Alma Mater Studiorum, University of Bologna, Bologna, Italy 3. I am Hillary Righini, Post Doc at the Department of Agriculture and Food Sciences, University of Bologna. During my studies, I gained the proper knowledge about plant protection and came out with an interest in alternative solutions to synthetic products for plant protection against fungal plant pathogens. During my Master's thesis, I started research on extracts from algae and cyanobacteria as new plant bio-protectants and deepened my knowledge during the Ph.D. at the Banco Español de Algas (Spain) where I spent one year. Actually, I'm working on the main bioactive components from algae and cyanobacteria, such as polysaccharides, for plant pathogen management. Department of Agricultural and Food Sciences (DISTAL), University of Bologna, Viale Fanin 40, Bologna



Muhammad Faheem

Department of Farm Machinery and Power, University of Agriculture, Faisalabad 38000, Pakistan Key Laboratory of Modern Agricultural Equipment and Technology, Ministry of Education, Jiangsu University, Zhenjiang 212013, China

“Design, development and performance evaluation of zone disc tiller drill for maize crop production in Pakistan”

Keywords: Zone disc tiller drill, maize, design and development, crop parameters, conventional sowing

Abstract:

A light weight zone disc tiller drill was redesigned and developed employing Solid works and AutoCAD software's. For field performance evaluation of machine, the experimental trials were conducted at Post Graduate Research Station, University of Agriculture, Faisalabad, Pakistan. An area of 2.5 ha (6.12 acres) was divided two halves; one half of area was used for conventional method of maize planting and the second half was used for maize planting by redeveloped zone disc tiller drill. It was observed that under conventional method, extensive field preparation operations were performed, whereas no field preparation had been done for planting maize with zone disc tiller drill. After harvesting the paddy crop, zone disc tiller drill was passed through the standing stubble field and planted the maize seed in one pass. Crop planting results with zone disc tiller drill and conventional method under 3-levels of irrigation and 3-levels of fertilizer levels were compared for their impact on the crop parameters including emergence rate index, root length, root shoot ratio, shoot length, root fresh weight, root dry weight, shoot fresh weight, and shoot dry weight. All the data were statistically analysed and found that the emergence rate index by using zone disc tiller drill was 1.43 times greater than that under conventional maize planting. The emergence rate index at irrigation level I3 (after 4 days) was 1.23 times greater than that at I2 (after 6 days) and 1.40 times greater than that at I1 (after 8 days). The value of emergence rate index at fertilizer level F3 (148.2 kg/ha) was 1.61 times greater than that at F2 (123.3 kg/ha) and 3.32 times greater than that F1 (98.8 kg/ha). Plant shoot dry weight by using zone disc tiller drill was 1.68 times greater than that

Biography:

Dr. Muhammad Faheem was born in Punjab, Pakistan. He got his Ph.D. degree in Agricultural Engineering from School of Agricultural Equipment Engineering, Jiangsu University, Zhenjiang, China. He received the B.S. and M.S. degrees in agricultural Engineering from the University of Agriculture, Faisalabad, Pakistan, in 2010 and 2013.

From 2013 to present, he is working as an Assistant Executive Engineer (Lab Engineer) in the department of Farm machinery and Power. Since 2013, he has been in charge of the thermodynamics, Manufacturing and high efficiency CAD CAM laboratory. His current research includes agricultural engineering, robotic harvesting and control engineering. He was awarded with the China Government Scholarship (2017GXZ026592) for 36 months studying in P.R. China. He published more than 25 SCI papers as a corresponding and co-authors in well-reputed journals with a cumulative impact factor of more than 70 in the field of Agricultural Engineering and Energy. He published more than 10 ESCI, national, and international papers, also many more SCI papers are under review. He reviewed more than 65 SCI research and review articles in different more 10 SCI journals. He attended many International/National conferences/workshops/-seminars/trainings related to Agricultural Engineering and Energy. He published more than 20 Abstract in different International and National Conferences. He is editorial member of 2 Journals. His expertise are in the field of Farm mechanization, Renewable Energy Resources, Robotic in Agriculture, Automation, Solar Energy, and Manufacturing engineering.



Sara Karami

Meghdad Jourgholami , Sara Karami , Farzam Tavankar , Angela Lo Monaco, and Rodolfo Picchio

Master Graduated Tehran University

"Effects of Slope Gradient on Runoff and Sediment Yield on Machine-Induced Compacted Soil in Temperate Forests"

Keywords: writing, template, sixth, edition, self-discipline, good (maximum 6 words)

Abstract:

There has been a severely negative impact on soil water resources in temperate forests caused by the introduction of the type of heavy machinery in the forestry sector used for forest harvesting operations. These soil disturbances increase the raindrop impact on bare mineral soil, decrease infiltration rate, detach soil particles, and enhance surface flow. According to several studies, the role of slope gradient influence on runoff and soil loss continues to be an issue, and therefore more study is needed in both laboratory simulations and field experiments. It is important to define and understand what the impacts of slope gradient in harvesting practices are, so as to develop guidelines for forest managers. More knowledge on the key factors that cause surface runoff and soil loss is important in order to limit any negative results from timber harvesting operations performed on hilly terrains in mountainous forests. A field setting using a runoff plot 2 m² in size was installed to individualize the effects of different levels of slope gradient (i.e., 5, 10, 15, 20, 25, 30, 35, and 40%) on the surface runoff, runoff coefficient, and sediment yield on the skid trails under natural rainfall conditions. Runoff and sediment yield were measured with 46 rainfall events which occurred during the first year after machine traffic from 17 July 2015 to 11 July 2016 under natural conditions. According to Pearson correlation, runoff ($r = 0.51$), runoff coefficient ($r = 0.55$), and sediment yield ($r = 0.51$) were significantly correlated with slope gradient. Results show that runoff increased from 2.45 to 6.43 mm as slope gradient increased from 5 to 25%, reaching to the critical point of 25% for slope. Also, further increasing the slope gradient from 25 to 40% led to a gradual decrease of the runoff from 6.43 to 4.62 mm. Runoff coefficient was significantly higher under the plot with a slope gradient of 25% by 0.265, whereas runoff coefficient was lowest under the plot with a slope gradient of 5%. Results show that sediment yield increased by increasing the slope gradient of plot ranging 5% to 30%, reaching to the critical point of 30%, and then decreased as the slope gradient increased from 35% to 40%. Runoff plot with a slope gradient of 30% (4.08 g m⁻²) $\approx$ plot length of 25% (3.91 g m⁻²) had a significantly higher sediment yield, whereas sediment yield was lowest under the plot with a slope gradient of 5% and 10%. A regression analysis of rainfall and runoff showed that runoff responses to rainfall for plots with different slope gradients were linearly and significantly increased. According to the current results, log skidding operations should be planned in the skid trails with a slope gradient lower than the 25 to 30% to suppress the negative effect of skidding operations on runoff and sediment yield.

Biography:

Sara Karami, Master Graduated Tehran University I did my graduation from Urmia University in Iran with outstanding grades in the subjects of, Natural Resources Engineering. I am currently studying at Teheran University of Iran to get my, Masters in Forestry Engineering and am about to complete my research thesis on the subject of, Effects of different harvesting treatments on soil, nitrogen, and phosphorus losses in the surface flow in Kheyroud forest



Satwik Majumder

Charles Viau, Amarpreet Brar, Jianguo Xia, Saji George

Department of Food Science and Agricultural Chemistry,
Macdonald Campus, McGill University, 21,111 Lakeshore Ste
Anne de Bellevue, Quebec H9X 3V9, Canada

“Halloysite nanotube with silver and tannic acid: A sustainable Nano-enabled antibacterial combination therapy (NeACT) for application in animal agriculture”

Keywords: Animal agriculture, Sustainable nanotechnology, Halloysite nanoclay, Tannic acid, Nanosilver, Nano-enabled Antibacterial Combination Therapy (NeACT), Antimicrobial resistance (AMR), Zoonotic infections, *Salmonella enterica* serovar Typhimurium, *Caenorhabditis elegans*.

Abstract:

The prevalence of antimicrobial resistance (AMR) among pathogenic bacteria warrants alternate therapeutic strategies that are efficient in remediating zoonotic infections. Combination therapy with more than one antimicrobial with complementary action has shown possibilities to prevent or slow down AMR. The application of nanoclay-based biomaterials could, however, resolve challenges of poor bioavailability, cytotoxicity, stability, release, and overdosing and play a significant role in formulating cost-effective sustainable therapeutics. In this study, a nanocomposite (GH-TA-Ag-NT) containing nanosilver (AgNPs) grafted onto tannic acid (TA)-modified halloysite nanotubes (HNT) was generated and tested for physicochemical and antibacterial properties. The Transmission Electron Microscopy, Fourier Transformed Infra-Red, Dynamic Light Scattering, and X-ray Diffraction Spectroscopies confirmed the synthesis of the nanocomposite. GH-TA-Ag-NT demonstrated enhanced stability, drug-bioavailability with a slow-release of Ag⁺ and TA. The nanocomposite showed excellent antibacterial performance in comparison to commercial TA-stabilized AgNPs when tested against *E. coli* ATCC 25922, *S. aureus* ATCC 25923, and a multi-drug resistant (MDR) *Salmonella enterica* serovar Typhimurium (isolated from infected swine) owing to the combinatorial effect mediated through anti-efflux/anti-biofilm properties, oxidative stress, loss of bacterial membrane potential, and integrity. The toxicity and antibacterial efficiency of GH-TA-Ag-NT to remediate gastrointestinal infection were demonstrated in the *S. Typhimurium* infected *Caenorhabditis elegans* model. The nanocomposite was less toxic, reduced *Salmonella* colonization significantly in 24 h of exposure, and improved worm survivability. In summary, we demonstrated a unique and novel strategy to counter AMR bacteria applying Nano-enabled Antibacterial Combination Therapy (NeACT) with GH-TA-Ag-NT with multi-functional characteristics that could resolve the common challenges of poor bioavailability, cytotoxicity, stability, drug release, and overdosing. Thus, it warrants potential use as a therapeutic against zoonotic pathogens in animal agriculture.

Biography:

My research addresses the implications and application of sustainable nanotechnology in the field of food and agricultural safety and security.

The extensive use of antibiotics relevant to human health in animals has contributed significantly to the emergence and transmission of antimicrobial resistance (AMR) through direct contact from infected animals or the food supply chain. Continuous surveillance for AMR among bacterial isolates from farms is vital for the effective management of zoonotic infections. Therefore, I am monitoring antimicrobial resistance and virulence characteristics in bacterial isolates from infected livestock of Canadian farms through phenotypic and genotypic studies.

Combination therapy with more than one antimicrobial agent comprised of complementary mechanisms of action has shown possibilities to prevent or slow down AMR. However, such therapies have still shown vulnerability towards AMR or faced challenges of poor bioavailability, cytotoxicity, stability, release, and overdosing. The application of nanomaterials could resolve these issues and play a significant role in advanced formulations of cost-effective and sustainable therapeutic strategies as a multiple drug carrier. Hence, the ultimate goal of my research is to create nano-enabled therapeutics to restrict bacterial pathogenicity and thus, zoonotic infections.

Luca Lombardo

Council for Agricultural Research and Economics-Research Centre for Olive, Fruit and Citrus Crops, 87036 Rende, Italy

"Sustainable extra virgin olive oil, a development perspective for the Italian sector"

Abstract:

Sustainability is a consolidated decision-making lever for consumers, who are increasingly attentive to environmental, social and food quality issues. Consequently, Italian olive growing, historically burdened by fragmentation, must aim at the transition to economically and environmentally sustainable management systems, linked to premium quality production and to a remunerated context of biodiversity conservation. The drafting of a sustainability program for the olive-oil supply chain is therefore aimed at providing a technical support for the Italian olive growers through the promotion of environmental, socio-economic and cultural sustainability practices.

The formulation of the technical standard was based on the National Integrated Production Quality System (SQNPI), national regulations, best practices, scientific evidences, the ISO 26000:2010-Social Responsibility Standard and public and private sustainability standards.

For the selection of the requirements, the production processes of the agricultural and the olive mill phase, have been characterized in terms of environmental sustainability, food safety and quality, ethically and socially responsible behaviors, olive biodiversity and cultural heritage protection, profitability and the fair sharing of value among stakeholders.

38 requirements have been selected, divided according to the four pillars of sustainability: Environmental (19), Food Quality/Safety (5), Social (9) and Economic (5). Mandatory actions and best practices are envisaged for each requirement. These requirements are now being validated through the participation of some pilot companies. Preliminary results demonstrate a strong interest of the farmer despite a low level of education and training in the sustainability aspects of the protocol implemented. Strategy for the participation activities and engagement should be preliminary to any collection of data either in the oil process phases and farm organization.

The development of a sustainability specification ultimately aims to represent a reference for the Italian olive oil companies in the definition of a sustainability plan and the improvement process through the definition of specific verifiable objectives, and periodic review along the olive-oil chain.