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**ABSTRACT
BOOK**



PLENARY SPEAKERS

Tharwat Mamdouh Al-Bataineh*

Food Regulatory, Specialist Food Safety and Halal Regulations



Innovative Environmental Resource Technologies for a Healthy Halal Lifestyle: Advancing Sustainability, Safety, and Circular Agriculture

Abstract:

A global sustainability system that leverages advanced environmental resource technologies can significantly enhance food safety, reduce waste, and optimize agricultural productivity. By integrating cutting-edge innovations such as precision agriculture and (Ecodrum) technology systems, organic waste can be transformed into high-quality compost and other valuable byproducts, contributing to safer and more sustainable food production.

Integrating Halal standards into this sustainability framework ensures that all resources, processes, and products comply with Islamic guidelines. Halal requirements within sustainability emphasize ethical sourcing, responsible production, and conscientious consumption. A Halal-aligned sustainability system prioritizes environmental protection and the ethical treatment of animals, water resources, and plant life, ensuring that production processes remain eco-friendly and avoid unnecessary harm to living beings.

Ecodrum technology plays a pivotal role in waste management by offering controlled, efficient, and scalable solutions for breaking down complex organic matters. This process yields compost that is safe for human use, improves soil health, and enhances crop yields, supporting resilient agricultural systems. Additionally, compost can be repurposed for animal bedding, aligning with best practices in animal welfare and farm hygiene.

Emerging biotechnologies further enable the conversion of agricultural and animal waste into biofuels, fertilizers, and even animal feed, reducing reliance on raw materials and mitigating environmental degradation. These innovations support circular resource use, minimize overexploitation of land and water, and preserve biodiversity.

This presentation examines the full Ecodrum technology process; from raw material input to final product; highlighting its advantages in food safety, environmental impact reduction, and agricultural innovation. It also addresses key challenges such as risk management, regulatory compliance, and operational scalability.

In summary, the integration of environmental resource technologies into food systems offers a transformative pathway toward safer, more efficient, and sustainable agricultural practices. These innovations not only advance waste management but also reinforce global efforts to secure food safety and environmental resilience.

Keywords:

Animal Waste Index, Sustainability, Ecodrum, Waste Management.

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Biography:

Dr. Tharwat Mamdouh Al-Bataineh is a highly respected veterinary specialist with over 27 years of governmental experience in animal health, food safety, biosecurity, and halal practices. She holds advanced degrees in veterinary medicine, microbiology, and halal food auditing, and has served in senior leadership roles at the Ministry of Agriculture in Jordan and the Ministry of Climate Change and Environment in the United Arab Emirates for more than two decades.

Renowned for her strategic acumen in risk management, trade facilitation, and policy development, Dr. Al-Bataineh has played a pivotal role in shaping national and international food systems. Her contributions span high-level committees and cross-border initiatives, where she has helped design inspection protocols, disease surveillance frameworks, and food security strategies aligned with global health and regulatory standards.

A champion of innovation and sustainability, Dr. Al-Bataineh advocates for ethical, science-based approaches to food governance. She actively supports the responsible trade of halal-certified products and the adoption of cutting-edge laboratory technologies, including traceability systems, feed safety screening tools, and digital platforms for halal verification.

Her thought leadership continues to influence the future of food science and halal compliance, as she curates insights on emerging laboratory technologies and novel food developments. With a rare blend of regulatory expertise and visionary thinking, Dr. Al-Bataineh remains a trusted voice in advancing resilient, inclusive, and technologically empowered food systems worldwide.

A strong advocate for reducing food waste and transforming animal and crop by-products into valuable resources, Dr. Al-Bataineh champions circular-economy solutions that strengthen environmental sustainability and agricultural resilience. Her thought leadership continues to shape the future of food systems and halal assurance worldwide.

Tharwat Mamdouh Al-Bataineh*

Food Regulatory, Specialist Food Safety and Halal Regulations



Food Safety and Halal Requirements in a Changing World: Quality, Novel Proteins, Consumer Awareness, and Our Shared Responsibility

Abstract:

The global food landscape is undergoing rapid transformation driven by technological innovation, population growth, sustainability challenges, and evolving consumer expectations. As new food sources emerge; including insect-based proteins, genetically modified ingredients, and other novel foods, the need to strengthen food safety systems and halal compliance frameworks has become more urgent than ever. This presentation explores the intersection of food safety, halal integrity, and public health in an era of unprecedented change.

The talk will examine the scientific, regulatory, and ethical considerations surrounding novel proteins, with particular attention to allergenicity, cross-contamination risks, and the cultural sensitivities associated with halal certification. It will highlight the increasing importance of transparent labelling, especially for vulnerable groups such as children, who rely on adults and institutions to safeguard their dietary well-being. As food systems become more complex, consumer awareness and literacy must be strengthened to ensure individuals understand what they eat and how it affects their health.

government, and industry to protect the ecosystem, uphold food quality, and ensure that innovation does not compromise safety or cultural values. By fostering collaboration, investing in research, and promoting regulatory harmonization, stakeholders can collectively build a resilient and ethical food system that supports both human health and environmental sustainability.

This presentation aims to inspire dialogue on how we can safeguard the future of food while honouring the principles that guide our communities; ultimately contributing to a safer, more informed, and more responsible global food ecosystem.

Keywords:

Dr. Tharwat Mamdouh Al-Bataineh is a highly respected veterinary specialist with over 27 years of governmental experience in animal health, food safety, biosecurity, and halal practices. She holds advanced degrees in veterinary medicine, microbiology, and halal food auditing, and has served in senior leadership roles at the Ministry of Agriculture in Jordan and the Ministry of Climate Change and Environment in the United Arab Emirates for more than two decades.

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Silvi Navarrete*,
Sustainability Manager, Doehler Group



Corporates, Researchers, and Startup Accelerating Innovation: The Unhidden Challenges of CollaborACTION

Abstract:

In today's rapidly evolving business landscape, innovation is a key driver of competitive advantage, but it often faces significant hurdles. Successful collaboration between corporates, research institutions, and startups is critical for fostering innovation and addressing global challenges. However, these collaborations frequently encounter hidden challenges that can slow down or even derail progress. This presentation will explore the complexities of these partnerships and provide real-world insights into how to navigate the obstacles that may arise.

Using the example of sustainable apple sourcing in Poland, a case study supported by the International Development Hub (IDH), The Doehler Group, Sustainable Juice Covenant, Riedel, Cawston, Eckes-Granini, we will examine how corporates and research institutions work together to upscale sustainable agricultural practices. The collaborative effort highlights the crucial role of joint research and development in overcoming supply chain inefficiencies, boosting local economies, and scaling solutions to global sustainability challenges. By sharing the unspoken barriers and practical solutions found in this partnership, this presentation will shed light on how researchers, startups, and corporates can accelerate innovation in an increasingly interconnected world.

Keywords:

CollaborACTION, Innovation, Apples, Poland.

Biography:

Silvana Navarrete, Innovative Partnerships Leader | Agri-Food Expert | Creator & Starter

I am a passionate creator and starter, driven by a mission to launch impactful partnerships that innovate within the agri-food space. With extensive experience in the coffee sector, I transitioned to the ingredients sector two years ago, bringing a fresh perspective and a focus on sustainability and innovation.

Throughout my career, I've played a key role in building strategic collaborations that address industry challenges and drive forward-thinking solutions. I thrive in dynamic environments, where I can spearhead new initiatives and deliver results that shape the future of food production.



KEYNOTE SPEAKERS

Ioannis A. Giantsis*, **K. Melfo***, G. Koutouzidou²,
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The Golden Mean of Cross-Breeding: Combination of Indigenous Sheep Breeds Conservation and Genetic Improvement Towards Increased Resilience and Productivity. The Case of Livadi Co-operative, in Mount Olympus, Greece

Abstract:

Sheepfarming enacts a very important role for the Mediterranean countries, enabling the exploitation of low productivity semi-mountainous land such as pasture. In Greece, for instance, there are 23 dairy products – cheeses certified as PDO (Protected Designation of Origin) by the European Union authorities, in which sheep milk is implicated, reflecting the intense heritage of this sector. Apart from the high cultural and economic value, sheep in Greece constitute a major component of biodiversity, with more than 25 recognized indigenous breeds, several of which are considered extinct or highly endangered. The main reason for this extinction risk is their abandonment by the producers, who prefer to rear more productive breeds, mainly in terms of milk production quantity.

Particularly, during the last 3-4 decades extensive crossbreeding of Greek indigenous breeds has been performed with breeds such as Lacaune and Assaf [1]. Crossbreeding may lead to two contradictory outcomes. On the one hand, it constitutes a major approach towards genetic improvement, but on the other hand it composes a risk for the loss of pure breeds [2]. Thus, crossbreeding schemes have to be designed after ensuring that the stock is not endangered as well focusing on particular traits. In sheep farmed in Greece, in particular, such schemes are successful when targeting towards the increase of milk production in combination with tolerance against harsh environmental conditions and diseases. According to recent findings, the crossbred Karagouniko x Lacaune sheep reared in Livadi, at the foot of Mount Olympus in Greece, constitute a promising genetic improvement applied scheme that has maintained resilience in climatic conditions and resistant to Visna Maedi genotypes along with a substantial increase in milk production. Since the indigenous breed Karagouniko is not at risk, conservation is also ensured.

Keywords:

Karagouniko sheep, Lacaune, Genetic Improvement, Conservation, Tolerance

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References:

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- [2] I.A. Giantsis, D. Antonopoulou, N. Dekolis, K. Zaralis, Avdi, M. 2022. *Trop. Anim. Health Prod.*, 54(1), 73.

Biography:

Ioannis A. Giantsis is an Assistant Professor of Invertebrate and Vertebrate Animal Molecular Genetics, in the Department of Animal Science, Faculty of Agriculture, Forestry and Natural Environment, Aristotle University of Thessaloniki, Greece. His research interests include the application of molecular methods in Animal Science and Zoology, population genetics, the detection of pathogens and environmental applications to estimate and mitigate the effects of climate change on animal farming as well as on wild populations. He has published more than 100 research papers in the field of animal science, supervised 3 PhD dissertations and is implicated in more than 20 research projects, in 5 of which as a Scientific Coordinator.

E.S. Dierenfeld*

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Seaweeds as Sustainable Alternative Ingredients in Livestock, Poultry & Fish Diets: Tropical vs. Temperate Species Considerations

Abstract:

Seaweeds are increasingly investigated as alternative livestock feed ingredients due to rapid biomass production with low resource inputs, bioactive components with positive health impacts, and potential environmental benefits over terrestrial feed resources including greenhouse gas emissions reduction. Broad differences exist between tropical and temperate seaweed species in nutritional composition and feed value.¹ Temperate seaweeds, particularly brown macroalgae such as *Ascophyllum*, *Saccharina* and *Laminaria* spp., generally exhibit higher concentrations of poorly digested complex polysaccharides (alginates, laminarin, fucoidan and total carbohydrates; 40-60% dry matter, DM), ash (20-40% DM, high sodium and potassium) and iodine (0.3->1% DM) but moderate to low protein (5-15% DM) and lipid content. Although select tropical seaweeds including red (*Gracilaria*, *Asparagopsis*) and green (*Ulva*, *Caulerpa*) species often exhibit higher crude protein levels (15-30% DM) with balanced amino acids, the tropical seaweeds on average are of lower protein and fiber content but may display higher soluble carbohydrate concentrations that can be more fermentable and nutritionally available. While lipid content is very low in most macroalgae (<2-3% DM), tropical species may contain higher proportions of omega-3 polyunsaturated fatty acids. Total ash is typically lower in tropical species (10-25% DM), as is iodine content (<0.05% iodine); mineral makeup contains higher Ca and Mg proportions. Antioxidant activities across seaweeds are documented within multiple nutrient categories: pigments (chlorophylls, total carotenoids), flavonoids, and phenolic fractions, and vary by seaweed type as well as sampling location.

These compositional differences may influence digestibility, palatability, and safe inclusion rates across all herbivore diets. Awareness of geographic and environmentally-driven nutritional variability is essential for species selection, feed formulation, and assessing the sustainability and scalability of seaweeds as potential livestock feed ingredients across production systems.

Keywords:

Aquaculture, Aquatic ingredients, Dietary supplements, Macroalgae, Nutrition

References:

[1] A.D. Hughes, G. C. Twigg, F. E. Msuya, K. P. Padmakumar, D.R. Tocher, *Frontiers in Aquaculture*, 4, 1570842, (2025).

Biography:

Ellen Dierenfeld is a comparative animal nutritionist (Iowa State and Cornell degrees). She led Nutrition programs for the Wildlife Conservation Society (NY) and St. Louis Zoo before joining R&D and Sustainability groups at an international agri-firm to manage testing their additives with local livestock, environments, and feeds across Africa. In 2022 she joined the World Wildlife Fund's Sustainable Livestock and Feed Systems team as Lead Specialist, Sustainable Feed Innovations, working across livestock, poultry and aquaculture targeting circular and novel ingredients. Seaweed as Feed has been a focus for the past 2 years, evaluating multiple aspects within its value chain.

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RUNX1: A Novel Therapeutic Target for Myocardial Infarction and Cerebral Infarction

Abstract:

Ischemia of organs can have severe consequences such as myocardial infarction (MI) and cerebral infarction. In the clinical setting, ischemic stroke and MI are both life-threatening conditions with narrow therapeutic time-window that leads to poor patient prognosis. Pharmacological approaches against these diseases remain limited and thus new therapeutic targets are urgently needed. RUNX1, the Runt-related transcription factor-1, is an emerging target for cardiovascular diseases. RUNX1 is a member of the core-binding factor family of transcription factors. It is a master regulator transcription factor which works at top levels of signaling cascades and dictates cell fate during development. RUNX1 was classically characterized for its involvement in hematopoietic system and blood cancer genesis. Recently, a role that RUNX1 plays in the heart has come prominence and it represents a promising therapeutic target for MI, adverse cardiac remodeling, and heart failure. Here, we present our recent progress in the study of RUNX1 using animal disease models of MI and ischemic stroke. Our data show that targeting RUNX1 reduces infarct size and improves cardiac function following MI. The protective effect is associated with the repression of a key type of lysosomal proteases, cathepsins. Inhibition of RUNX1 reduces the expression of cathepsins and prevents the activation of cathepsin-mediated cell death signaling following ischemic injury. Based on our data and recent findings from other groups, we envisage that the usage of RUNX1 as a therapeutic target for tissue protection has the potential to be translated into clinical application for the treatment of MI and ischemic stroke.

Biography

Weihong He is a principal investigator and associate professor at the Department of Physiology, West China School of Basic Medical Sciences and Forensic Medicine, Sichuan University. Weihong obtained an MD (2012) at West China School of Medicine & West China Hospital, Sichuan University, and completed a PhD (2017) at the BHF Glasgow Cardiovascular Research Centre, University of Glasgow. Weihong was associate professor at Jining Medical University (2018-2020). Since 2020, Weihong has led a research group to study the pathophysiology of cardiovascular diseases and to investigate novel therapeutic drugs for the treatment of myocardial infarction and cerebral infarction at Sichuan University. He also teaches physiology and mentors both national and international students. Weihong has expertise in a number of methodologies which span the level of biochemistry, cell biology, isolated organ, and whole animal in vivo disease models.

Douglas Gene Landblom*, S. Şentürklü 1,2, and S. I. Paisley³

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Extending the Grazing Season with Bale Grazing and the Subsequent Effect on Feedlot Performance

Abstract:

Yearling beef cattle steers (n=144) were randomly assigned to an extended grazing study to compare grazing native range (NR) or a sequence of NR and annual forages (ANN: field pea-barley, corn, cover crop) to evaluate the effect of extending the grazing season feeding cover crop bales (bale grazing) before feedlot entry and the subsequent effect on steer performance and economics. Bale-grazing cover crop bales extended the grazing season 41.5 days (180 to 221.5 days). Forage sequence grazing combined with cover crop bale grazing supported ADG of 0.953kg/day for steers that grazed a combination of NR and ANN forages compared to 0.771kg/day for steers that grazed NR for the entire period (P = 0.01). The ANN steers were 43.04kg heavier at the end of grazing (P = 0.001). Muscling expressed as the ratio of hot carcass weight to ribeye area (REA) did not differ (NR 1.05; ANN 1.05, P=0.53); however, ANN steer REA (P=0.002) and percent intramuscular fat (IMF) were greater (P=0.05). In the feedlot, the steers were on feed 95.7 days. The ANN steers entered the feedlot heavier (P=0.04) and were 33.6kg heavier at the end of finishing but did not differ (717.62 vs. 684.0 kg; P=0.19). For carcass measurements, ANN steer HCW was 25.7kg heavier (P=0.03). The NR steer dressing percentage was greater, and muscling was also greater for the NR steers (P = 0.007), i.e. improved yield grade (P=0.01). Carcass quality grade was 98.6% Choice/Prime. Grazing a sequence of ANN forages for 177.9 days and cover crop bales for 43.66 days resulted in a weight margin entering the feedlot that remained to the end of finishing. Gross carcass value was greater for the ANN forage steers (\$1,921.67 vs. \$2,013.93; P=0.031).

Net return was greater for the NR steers (ANN: \$483; NR \$545) due to greater ANN forage farming expenses. Overall, the two systems were similar and easily adaptable depending on the farm operator's goals.

Keywords:

Beef Cattle, Steers, Native Range, Annual Forages, Feedlot Finishing, Carcass

References:

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Biography:

Douglas G. Landblom is an Associate Research Extension Center Specialist at North Dakota State University's Dickinson Research Extension Center, where he has served since 1974. With over five decades of experience in animal science, his research focuses on the intersection of livestock production, soil health, and economic sustainability.

He is a leading expert in integrated crop-livestock systems, investigating how diverse crop rotations and strategic cattle grazing such as "bale grazing" and delayed feedlot entry can improve regenerative land management and producer profitability. Throughout his career, he has secured over \$2.5 million in competitive grants from agencies like the USDA-NIFA and NRCS.

A prolific researcher, Landblom has authored numerous peer-reviewed studies on beef cattle nutrition, heifer development, and alternative feed sources like field peas. His commitment to sustainable agriculture was recognized with the 2019 Soil and Water Conservation Society Merit Award for his contributions to regenerative management practices in the Northern Great Plains.

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Reducing Beef Cow Winter Maintenance Cost

Abstract:

Inputs for beef cattle production are predominantly feed for maintenance and production, and these include but are not limited to harvested and grazed forages, supplemental protein and energy, minerals, grain, and by-products from grain and oilseed processing. By comparison to feeding harvested feeds (hay and silages) to non-lactating gestating beef cows after weaning, grazing mature grasses (bromegrass and crested wheatgrass), crop residues (corn, sunflower), and cover crops are ideal options for reducing cow wintering expenses. The digestible protein content of “low-quality” forages is below the nutrient requirement for non-lactating beef cows in the middle third of pregnancy, which depending on cow weight (600 – 650 kg) is approximately 2.8% of dry matter intake. Mature forages and crop residue crude protein content declines with advancing season from late fall (November) to mid-winter (December-January) and ranges from 7.0% early in the fall to lows of 4.0-5.0% during the winter. Replacing low-quality forage protein deficiencies can be accomplished easily by feeding a small amount of supplemental protein. Beef cow winter grazing research at the Dickinson Research Extension Center documented that daily feeding of 0.79 kg of a 32% crude protein compound range cube supplement to May-June calving cows that grazed 0 days Control (C), 73 days Cover Crop & Residue (CC/RES), and 107 days Grass & Residue (G/RES) maintained their starting body condition; however, C cows fed harvested feed over the winter were 42.2 kg heavier than G/RES cows (P=0.001). Although the cows wintered in confinement were heavier, calving cycle percentages were similar, i.e. first calving cycle: C 72.6%, CC/RES 69.3%, and G/RES 60.5% (P=0.12) and the 2nd calving cycle was C 10.4%, CC/RES 23.8%, and G/RES 20.8% (P=0.15).

Total calving percentage did not differ: C 89.3%, CC/RES 95.5%, and G/RES89.6% (P=0.46). Winter feeding cost per cow was C \$208.81, CC/RES \$140.59, and G/RES\$73.33 (P=<0.001). Replacing harvested feed with low-quality forage grazing combined with protein supplementation reduces winter feed cost, labor, tractor fuel cost, and equipment repair without impacting reproductive performance. Caution. Blizzards with high wind and blowing snow can create dangerous life threatening conditions for winter grazing cows. Storm protocols must provide for wind protection and emergency hay supplies well in advance.

Keywords:

Beef Cows, Non-Lactating, Mature Grass, Crop Residue, Economics

References:

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Machteld Huber MD PhD*

Institute for Positive Health, Utrecht, The Netherlands



Organic, More Healthy? Indications Towards a Positive Conclusion are Increasing

Abstract:

Working as a medical researcher at a multidisciplinary research institute - the Dutch Louis Bolk Institute - I became increasingly fascinated by the comparative research on cultivation systems by my agricultural colleagues. Especially findings of decreasing secondary metabolites, connected to increasing amounts of fertilization, struck me, as these secondary metabolites are besides being part of the defense system of the plants, most important for the nutritional value for consumers.

So could it be that lower fertilization, as used in organic agriculture, would grow healthier food? Performing research on that topic became my aim and as this is a very complex research question, I first organized a two day conference with a broad variety of researchers, to discuss possible biomarkers and a research design. We reached consensus, that if there would be any effects on health, these would show firstly in the immune system of the second generation of animals that were fed on foods from different cultivation systems.

As the University of Wageningen had a 25 generation old immunological chicken model, we did choose these animals for our research. The knowledge of the human immune has a basis in research in birds, so this was not so strange. As the chickens were meant to be models for humans, so we build 'chicken-Hiltons' for them, so they could perform their typical behaviour. We followed two generations with a very broad range of observations, including growth, broad immunology, metabolomics and at the end pathological anatomy and taste research.

The problem was that during their development all animals were, although some difference in growth and in reaction to vaccinations, perfectly healthy. But when we challenged them, differences appeared! Then a problem arose, when we had to draw conclusions.

Which food group is healthier?

Although the majority of the researchers had a preference for which animal they would want to be themselves, this is not a scientific conclusion.

We concluded that we could not draw conclusions, 'as we do not know what health is...'

The study was published using 'resilience' instead of 'health'.

This led to follow-up work on a new definition of health, which resulted in a proposal, published in the British Medical Journal, and by now cited more than 4000x.

Based on that proposal after all a conclusion can be drawn.

The Keynote will describe the chicken study, the newly proposed concept of health, as well the latest literature review on comparative studies on organic and conventional food consumption

Keywords:

Organic Nutrition, Health Effects, Health Definition

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Biography:

Machteld Huber (1951, The Netherlands) was originally a general practitioner, but when she experienced several illnesses herself, she discovered that she could actively and positively influence her recovery and well-being. She decided to focus her work on 'increasing health', as researcher at the multidisciplinary Louis Bolk Institute (LBI). There she saw much agricultural research pass by, which raised her interest in food quality and in possible health effects from organic agriculture. She participated in several different research projects on possible health effects and led the largest animal study so far on this topic. As a follow-up she developed a new concept of health, which she elaborated into the broad and practical concept of Positive Health, which is embraced broadly in The Netherlands as well as increasingly abroad.

Shahana Kazmi*

Inst. Of Health and Innovative Research (IIHIR), President –
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**Addressing AMR Challenges for Food Safety and Public Health****Ghulam Fatima¹, Shahana Urooj Kazmi²****Abstract:**

The emergence of antimicrobial resistance among bacterial pathogens over the last few years has appeared as a major global health concern. Alarming increase in AMR throughout the globe, and Pakistan is not an exception, mainly due to self-medication, > 50%, doctors prescribing 2-3 antibiotics without Lab data, even for viral infections - we now have XDR typhoid strains reported in Hyderabad and Karachi cities which are Resistant to ampicillin, chloramphenicol and co-trimoxazole, third generation cephalosporin and fluoroquinolones. MDR-TB prevalence is exceptionally high, around 1.3 million cases reported annually. MDR enterobacteriaceae, (ESBL), methicillin resistant S. aureus (MRSA), New Delhi metallo β -lactamases (NDM), (VRE) etc due to misuse. The main factors responsible for emerging AMR strains is misuse of antimicrobial agents, inappropriate diagnosis, inadequate dosing and poor compliance to the antibiotic treatment as well as use of antimicrobial agents in food industries, agriculture, aqua culture and poultry as growth promoters. Contamination of Food with AMR pathogens is very common cause of diseases and death globally > . Each year 5000 people lose life due to non-typhoidal Salmonella infections worldwide. We need to take steps, make policies to protect the health of consumers. Antibiotic use in animals has gone up to achieve different objectives. Antibiotics prescribed to humans also used in animals. In 2019 report 5M deaths worldwide were associated with R bacteria, with almost 1/4 of these deaths being directly attributed to AMR. In 2018 WHO reported the high levels of resistance among bacterial pathogens across 22 countries.

S. aureus, *S. pneumoniae*, *E. coli*, *K. pneumoniae* and *Salmonella* spp. reported as the most common resistant pathogens in both low- and high-income countries. Major cause of mortality and morbidity in Pakistan –more infections with MDR and XDR MTB, MRSA and Carbapenem resistant *K. pneumoniae*. In 2019 report, 59,200 deaths in Pakistan were directly due to AMR pathogens. AMR was found to be the third-leading cause of death in 2019, behind only cardiovascular disease and maternal/neonatal disorders. Pakistan is facing an increasing antibiotic-resistant *S. typhi* infections, which are now endemic in many developing countries with millions of deaths and it continues to be a major cause of morbidity and mortality. *Salmonella* a food borne pathogen causing infection in human by the fecal-oral route, often via contaminated animal origin food and water. Antibiotic resistant *S. typhi* has increased due to, uncontrolled use and easy accessibility to antibiotics which lead to transfer of plasmids encoded antimicrobial resistant genes. *S. typhi* resistant to single and multiple antibiotics resistance has increased since 1960s, resulting in spread of MDR/XDR strains of *S. typhi*. Failure of treatment is associated with plasmid mediated quinolone resistance genes, however it is still drug of choice for the treatment of MDR *S. typhi* typhoid. In case of emergence of Fluroquinolone resistant *S. typhi*, the drug of choice for typhoid fever are third generation Cephalosporin such as ceftriaxone, cefotaxime and cefixime. XDR strain of *S. typhi*, resistant to cephalosporin antibiotics have been reported with major resistant proportion for the first time in different provinces of Pakistan, primarily in Hyderabad and Karachi. The emergence of XDR strain has limited our treatment options and remains only susceptible to azithromycin and carbapenems. In one of our study to analyze recent trends in antibiotic resistance profile and seasonal distribution of XDR *Salmonella typhi* isolates in patients who reported to one of the largest tertiary care hospital of Karachi - Sindh, we recorded an increasing trend of XDR *Salmonella* (62-71%) as compared to MDR strains (62-25%), suggesting increased emergence of AMR. All isolates exhibited high level of resistance to co-trimoxazole (47 & 84%), chloramphenicol (50 & 85%), ampicillin (49 & 87%), ciprofloxacin (59 & 89%), ceftriaxone (25 & 85%), cefixime (25 & 75%) in 2017 & 2018 respectively. Unfortunately, in high density -incidence sites, majority of cases were in children aged 2-10 years which is a serious cause of public health concern. AMR control challenges include: Very low doctor to-patient ratio, low health literacy and a lack of patient education about AMR, low literacy in Pakistan, Low awareness among medical experts in Pakistan about effective treatments for resistant organisms. The Hygiene condition in hospitals, operation theaters is very poor, the patient goes for clean surgery but comes back with AMR Bacterial infection. Very high prevalence of misuse and overuse of antibiotics, 2 main drivers for the development of AMR in bacteria. Physicians administer antibiotics to 70% of patients. General physicians in public sector hospitals, prescribe 2- 3 drugs per patient. More than 60% of the population in Pakistan self-prescribes. Patients have easy over-the-counter access to buy watch antibiotics. Nearly 70% of antibiotics worldwide are used in livestock to prevent sickness, encourage growth and increase feed production.

One study found that antibiotic use by growers in Pakistan for broiler chickens alone was greater than every country in the world other than China, reaching nearly 568 tons annually. Despite these challenges, Pakistan is making significant progress toward combating AMR with its National Action Plan on AMR (NAP), firm commitment to battling this global crisis. WE need to create awareness about AMR among Public, and Medical Professionals, Consumers, producers and processors emphasizing One Health approach to food safety which recognizes that human, animal, and environmental health are interconnected, viewing the entire food system holistically to prevent risks like zoonotic diseases and antimicrobial resistance (AMR), rather than tackling issues in silos; this requires collaboration across sectors (health, agriculture, environment) to improve prevention, surveillance, and response from Farm to Fork, ensuring safe food for all. Year-round AMR monitoring through surveillance studies on pathogens causing infections in humans, animals, usage of antibiotics in Food Animals, toiletry, food products and Cosmetics be avoided. Update and implement regulations for human and veterinary antimicrobial utilization, prohibit use of antimicrobials as growth promoters and encourage use of prebiotics, probiotics and vaccination.

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**The Impact of Wheat Rotation and Integrated Livestock Practices on Agricultural Products, Soil Health, and the Economy for Sustainable Agriculture****Abstract:**

Integrating plant and animal production for sustainability in agriculture can increase farm profitability. Increasing nitrogen, a symbol of soil fertility, through crop rotation of legumes, combined with grazing systems and no-till methods, has improved soil fertility, grain yield and quality, and livestock production, resulting in higher net returns.

In a 12-year long-term integrated system study, continuously planted spring wheat (HRSW-CTRL) in the same field was evaluated alongside spring wheat (HRSW-ROT) grown in a five-crop rotation. This rotation was designed to include: 1) spring wheat, 2) a seven-species cover crop, 3) forage maize, 4) a pea/forage barley mixture, and 5) sunflower. Beef cattle were integrated into this rotation for grazing. One-year-old Angus cattle grazed on three different crops: a pea/forage barley mixture, unharvested maize, and a seven-species cover crop. The other two rotation crops (spring wheat and sunflower) were considered cash crops. No nitrogen fertilizer was applied after the third year of the study. Significant results were obtained in this research. Briefly, these are: 1- Improvement in soil fertility was observed in terms of soil organic matter (SOM), nitrogen (N), phosphorus (P), and potassium (K) in HRSW-ROT plots. 2- With the integration of animal grazing management into the rotation, although not statistically significant, a significant decrease in input costs was obtained in gross and net yield over a 12-year period.

3- Grain yield varied between the HRSW-ROT and HRSW-CTRL groups depending on weather conditions year-to-year. 4- The input cost of the rotated wheat (HRSW-ROT) was significantly lower compared to the control group wheat (HRSW-CTRL) ($p < 0.001$). However, there was no difference between the practices in terms of gross yields for the 12-year study. 5- In terms of soil fertility, post-planting N values in the soil were found to be significantly different in the HRSW-CTRL group and the HRSW-ROT group over a 12-year period ($p < 0.05$). 6- Over a 12-year study period, hard red spring wheat (HRSW-ROT) sown and grazed in rotation showed significantly higher levels of pH, organic matter, and phosphorus ($p < 0.05$), as well as potassium and chlorine ($p < 0.10$), compared to hard red spring wheat sown continuously. In summary, the higher soil test levels observed in the rotation group wheat are thought to be due both to legumes in the rotation and to the return of nutrients from animal manure or urine to the fields, i.e., nutrient recycling.

Keywords:

Annual Forage Grazing; Beef Cattle; Diverse Semi-Arid Environment; Multi-Crop Rotation; Spring Wheat, Soil Health

Grain Yield and Quality	HRSW CTRL	HRSW ROT	SEM	TrtYr	Trt x Yr	
12-Years p - Value						
Yields, kg ha ⁻¹	2212	2347	79.8	ns	<0.001	<0.10
Test Wt., kg	136.6	135.7	0.59	ns	<0.001	ns
Protein, %	12.9	13.2	0.25	ns	<0.001	<0.01

Input Cost, \$ Ha ⁻¹	424.31	397.24	0.96	<0.001	<0.001	<0.001
Gross Return, \$ Ha ⁻¹	497.73	514.75	49.46	ns	<0.001	ns
Net Return, \$ Ha ⁻¹	99.42	126.22	68.10	ns	<0.001	ns

HRSW	Soil Test Nitrate-N (kg ha ⁻¹)		
Culture	Pre-crop	Post-crop	Difference
HRSW-CTRL	48.3	43.6	5.4
HRSW-ROT	55.4	33.6	19.3
p-value	ns	<0.05	<0.05

Biography:

Songül Şentürklü is a Professor at Çanakkale Onsekiz Mart University, working in the Department of Plant and Animal Production at Biga Vocational School in Çanakkale, Turkey. Her academic work focuses on animal nutrition, cattle production systems, and sustainable integrated crop–livestock systems. She has been actively involved in several international research collaborations, particularly with North Dakota State University in the United States, where her work has contributed to research on soil health, grazing systems, and sustainable agricultural practices. Professor Şentürklü has published numerous articles in internationally recognized scientific journals such as *Animals*, *Agronomy Journal*, and *Journal of Animal Science*. Her research often explores the relationship between livestock management, crop systems, and environmental sustainability. In addition to her research activities, she teaches courses related to animal feeding, cattle breeding, poultry production, feed technology, and meat processing. She has also participated in many international conferences and scientific meetings, presenting her research and collaborating with scholars from different countries.



INVITED SPEAKERS

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Effects of Light Duration and Feeding Frequency on Growth Performance and Carcass Traits of Broiler Chickens

Abstract:

Broiler production efficiency is strongly influenced by management practices such as feeding frequency and lighting regimes. However, limited research has investigated their combined effects under tropical conditions, where environmental stressors may constrain growth performance and carcass yield. Therefore, this study addresses this gap by examining the interactive effects of feeding frequency and light duration on the growth performance and carcass characteristics of broiler chickens raised under tropical conditions. A total of 600 ten-day-old Ross 308 broiler chicks were randomly assigned to twenty-four pens in a 2 × 3 factorial arrangement with two feeding frequencies (twice daily vs. four times daily) and three light durations (16, 20, and 24 hours/day). There were six treatments, and each treatment was replicated four times with 25 birds per replicate. The trial lasted 35 days, with weekly measurements of body weight, feed intake, average daily gain (ADG), and feed conversion ratio (FCR). At the end of the trial, four birds per treatment were slaughtered for carcass evaluation. The results showed no significant interaction ($P > 0.05$) between feeding frequency and light duration on growth performance. However, Broilers fed twice daily exhibited significantly higher ($P < 0.05$) final body weight (2052 g vs. 1900 g), and improved feed conversion ratio (FCR; 1.46 vs. 1.60) compared to those fed four times daily. In contrast, light duration did not significantly ($P > 0.05$) influence growth performance, indicating that varying photoperiods had minimal impact under the conditions of this study. Neither feeding frequency nor light duration influenced carcass yield or major cut weights, but birds fed twice daily exhibited significantly heavier ($P < 0.05$) empty gizzards (46.70 vs 35.0 g).

The findings suggest that feeding broilers twice daily under tropical conditions significantly improves growth performance compared to four times daily, while light duration (16–24 hours) did not markedly influence growth or carcass traits. These results highlight the importance of optimal feeding frequency in broiler production, providing practical insights for improving productivity in tropical climates.

Keywords:

Broiler Chickens, Feeding Frequency, Light Duration, Growth Performance, Carcass Traits

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Biography:

Dr. Frank Idan is a Senior Lecturer and Researcher in the Department of Animal Science at Kwame Nkrumah University of Science and Technology. With over a decade of experience, he is dedicated to advancing sustainable agriculture through scientific innovation. His research focuses on optimizing feed quality, enhancing livestock health, and improving food safety.

Dr. Idan's expertise encompasses mycotoxin management, lighting regimes, advanced feed formulation, and mill quality assurance. He applies evidence-based strategies in poultry production, specializing in gut health, nutritional programming, and precision feeding. A passionate bridge between academia and industry, he excels at translating research into practical applications. He has a proven track record in fundraising and building strategic partnerships to support agricultural efficiency and long-term food security.

As a recognized educator and researcher, Dr. Idan is committed to knowledge sharing through scientific publications, data-driven analysis, and impactful extension initiatives. He combines innovation with stakeholder engagement to develop robust, sustainable solutions for animal nutrition and production.

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Utilization of Albizia lebbeck Leaf Meal in Rabbit Diets: Growth Performance, Blood Indices, and Economic Implications

Abstract:

Tropical plants grow rapidly year-round making them popular as affordable alternatives to scarce conventional feed resources in tropical livestock production. *Albizia lebbeck* is a medium to large deciduous tree of the Fabaceae family, native to West Africa and parts of Asia. Its leaves are utilized as fodder for ruminants and in traditional medicine. While the seed and its oil have been studied in rabbit nutrition, research on its leaf meal and effects on rabbit blood profile in rabbits is limited. This study aimed at determining the impact of graded dietary levels of *A. lebbeck* leaf meal (ALLM) on growth performance and haematological and serum biochemical indices of weaner rabbits. Twenty-four weaner rabbits of mixed breeds and sexes weighing averagely 744 g were allocated in a Completely Randomized Design to four dietary treatments with 6 replicates. ALLM was incorporated into the four diets at 0, 10, 20 and 30 % inclusion levels. Following a one-week adaptation period, rabbits were fed their assigned diets for ten weeks. Feed intake, live weight changes, feed conversion ratio, haematological and serum biochemical indices were measured. Existing market prices for feed ingredients were used for economic appraisal of diets. Chemical analysis of ALLM revealed favourable attributes for rabbit feeding, with 21.08%, 52.86%, 32.27% and 2385.9 kcal/kg for crude protein, neutral detergent fibre, acid detergent fibre and metabolizable energy respectively. Weight gain and feed conversion ratio at 10 and 20% ALLM inclusion levels were comparable to the control leaf meal-free diet but declined at 30%. Economic analysis indicated a linear reduction in feed cost with increasing ALLM inclusion.

Whilst there were variations in some haematological and serum biochemical indices, all values were within normal physiological ranges for healthy rabbits suggesting that ALLM inclusion did not exert any deleterious effect on the rabbits. It was concluded that ALLM could be used up to 20% of the diet of weaner rabbits to reduce feed cost without any adverse effects on live weight changes and blood profile of rabbits in sustainable rabbit production systems in the tropics.

Keywords:

Albizia Lebbeck Leaf Meal, Growth Performance, Feed Conversion Ratio, Blood Profile.

References:

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Biography:

Dr. Alhassan Osman is a Research Fellow and Lecturer at the Dairy/Beef Cattle Research Station, Department of Animal Science, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. With nearly a decade of experience in research and teaching, he is committed to promoting sustainable livestock production through innovative scientific inquiry. His research interests include forage evaluation and conservation, the use of local agro-industrial by-products in livestock feeding, alternatives to antibiotics in ruminant nutrition, and rabbit nutrition and production.

Dr. Osman's expertise covers the utilization of local feed resources for formulating on-farm ruminant diets, pasture establishment, forage preservation, and data analysis. As a consultant to private livestock enterprises, he works to bridge the gap between academia and industry. He has authored twenty (and still counting) peer-reviewed publications and is dedicated to translating research outcomes into practical solutions for farmers. Additionally, as part of his contribution to the scientific community, he serves as a reviewer for multiple scientific journals.

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Mexican Food Security

Abstract:

Food security, understood as continuous access to sufficient and nutritious food, faces significant challenges in Mexico due to its growing dependence on imports of staple grains such as corn, wheat, beans, and rice, primarily from the United States and Canada. Since the signing of NAFTA in 1994 and its evolution into the USMCA, this dependence has increased, affecting the country's food self-sufficiency. Analysis of FAOSTAT and INEGI data shows that, although Mexico produces significant quantities of these grains, production does not meet domestic demand, creating high vulnerability to external factors such as international price fluctuations.

The study uses indicators such as Apparent National Consumption (ANC), the Food Dependency Index (FDI), and Pearson's evaluation coefficient to assess the impact of production, yield, and cultivated area on reducing the FDI. It concludes that increasing planted area and improving agricultural yields are key to reducing dependence. The research highlights the urgent need to implement policies that encourage domestic production, support small producers, and promote sustainable agricultural practices to strengthen food security and ensure a more resilient and self-sufficient system.

Keywords:

Food Dependency, Agri-Food Production, Self-Sufficiency.

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Biography:

Dr. Carlos Ernesto Luquez Gaitán, research professor at the Autonomous University of Chapingo. PhD in Agricultural Economics with a research focus on food security and econometric methods.

Tumen Wuliji*

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**Gastrointestinal Nematode Parasite Resistant Selection in
Small Ruminants****Abstract:**

Gastrointestinal nematode (GIN) parasite poses serious health risks and economic losses for the small ruminant livestock worldwide, which was severely impeding US sheep and goat farming profitability. GIN infections cause severe weight loss, diarrhea, protein deficiency, bottle jaw, and anemia in small ruminant animals. Existing conditions urge that an alternative GIN parasite control method needs to be sought for moderation GIN infections in small ruminants. This research initiative is to evaluate a GIN resistant selection in hair sheep breed - Katahdin. The objectives of project are: (a) to establish GIN resistant selective breeding groups and random control groups by prescreening on phenotypic traits and markers including fecal egg counting, body condition score, FAMACHA score, and blood immunoprotein profiles. (b) to develop GIN resistant selection breeding index for breeding animals and validate correlation coefficients in production traits with disease resistance in the progeny. (c) to identify phenotypic, genomic marker, and single-nucleotide polymorphism (SNPs) that related to GIN resistance, growth performance, and carcass traits in Katahdin sheep. The expected outcome of this project is to accomplish evaluation of selection efficiency for GIN resistance in Katahdin sheep breed and identify multiple correlative relationships in genomic and phenotypic performance traits in these genotypes. The preliminary data from flock screening breeding ewes and first crop progeny lambs were presented. Whereas, finding genetic markers, SNPs, and application of genomic values for sheep breeding may significantly improve selection efficiency for disease resistance and production sustainability.

Keywords:

Gastrointestinal Parasite Resistance, Katahdin, Selection Efficiency, Breeding Value, Genomic Marker.

Biography:

Dr. Tumen Wuliji is professor of animal science and program director at college of agriculture, environmental and human sciences, Lincoln University of Missouri. He graduated from Inner Mongolia Agriculture University in animal biotechnology (1977) and received a doctorate degree in animal science from University of New South Wales (Aust. 1989) and subsequently a postdoctoral training at AgResearch (NZ). Then he worked at MAFTech and AgResearch (1989-1998 NZ) and taught at Langstan University (1999-2005 OK) and University of Nevada (2006-2010 NV) continuously. He started current appointment at Lincoln University of Missouri since 2010. He has developed and taught more than ten undergraduate and graduate courses including biology, cell biology, parasitology, animal nutrition, small ruminant production, rangeland management, animal breeding, and genetics at these institutes. Meantime, he has supervised more than two dozen graduate research students (MS/PhD) and postdoc research fellows. His present research interests include small ruminant animal selection for gastrointestinal parasite resistance, organic meat animal production, livestock grazing agroforestry and management programs. He has published more than 250 publication and communications including refereed articles, proceedings, book chapters and abstracts.



POSTER SPEAKERS

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**Profile of Sugars, Minerals, and Polyphenols in Gluten-Free Biscuits and Crackers from Chestnut Flour****Abstract:**

Chestnuts are characterized by a significant nutritional composition, including starch, essential amino acids, vitamins, and minerals. As they are naturally gluten-free, interest in chestnut flour is increasing as a suitable raw material for individuals with coeliac disease, meeting the rising consumer demand for alternative bakery products [1,2]. This study aimed to characterize the profiles of sugars (sucrose, fructose, glucose, and maltose), major minerals (K, Ca, Mg, P), and total polyphenols in Slovak chestnut flour and two derived gluten-free products: biscuits and crackers. The chestnut flour's sugar composition, dominated by sucrose and maltose, was significantly altered by processing. In the biscuits, the sucrose content was elevated due to added sugar, whereas in the crackers, an increase in maltose suggested starch hydrolysis during baking. Chestnut flour was the richest source of minerals. It contained 5660 mg/kg potassium, 705 mg/kg calcium, 631 mg/kg magnesium, and 900 mg/kg dry weight. After processing, the mineral content of the biscuits and crackers was consistently lower. Furthermore, the high total polyphenolic content of the flour (2.15 mg GAE/g) was substantially reduced by thermal treatment, decreasing to 0.79 mg GAE/g in biscuits and 0.40 mg GAE/g in crackers. In conclusion, this study highlights that chestnut flour is an excellent base to produce gluten-free products with a valuable nutritional composition. Although processing affects the final nutritional profile, the resulting biscuits and crackers serve as an important source of carbohydrates, essential minerals, and polyphenols.

Keywords:

Castanea Sativa, Chestnut Flour, Sugars, Minerals, Polyphenols

Acknowledgement:

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Biography:

Ing. Silvia Fedorková is a doctoral candidate in the Food Technology program at the Slovak University of Agriculture in Nitra. Her doctoral research is focused on the chemical and bioactive components of plant-based foods, particularly chestnuts (*Castanea sativa*). Her expertise covers analytical methods, such as determining antioxidant activity, total polyphenols, reducing sugars, vitamins C and E, and fatty acid esters. She has authored/co-authored 9 (WoS) publications (H-index: 3) and has been an active contributor to multiple research projects.

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Reactions of Pig Body as Biosensors for Indoor Thermal Environment Evaluation

Abstract:

The thermal and humidity conditions in livestock housing significantly affect pigs' comfort, physiology, and performance. The previous research found that pigs respond sensitively to changes in these conditions. Therefore, physiological parameters like respiratory rate, body temperature, and heart rate, as well as behavioral states such as aggregation, were monitored. By using pigs' physiological parameters as biosensors and integrating environmental data from physical sensors, an evaluation method for assessing environmental quality in pig house was proposed. It was shown that correlations between indoor air temperature and physiological responses, supporting the use of physiological parameters to evaluate thermal conditions. Heat exchange simulation models for pig body achieved the mean absolute percentage errors (MAPE) of 8.27%, 17.5%, and 25.3% for rectal temperature, heart rate, and respiratory rate, respectively. Aggregation behavioral recognition achieved accuracy of 98.53%, with a compact architecture of 9.55M parameters. Therefore, the innovative approach for precision thermal environment assessment provides a basis for real-time environmental control based on behavioral and physiological responses.

Keywords:

Thermal Environment; Bio-response; Behavior; Body Temperature; Machine Vision.

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Biography:

Qiuju Xie received the Ph.D. degree in Agricultural Electrification and Automation (Computer Application direction) from Northeast Agricultural University, Harbin, China, in 2015 (jointly cultivated at the Department of Agricultural and Biological Engineering, Purdue University, USA, for her doctoral dissertation). She is currently a Professor and Ph.D. Supervisor with the Northeast Agricultural University. Her research interests include key technologies and equipment for precision livestock farming, digital agriculture, and agricultural IoT.

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**Genetic Variation in TMEM154 and TLR9 Genes in Greek
KaragounikoSheep Breed and Implications for SRLV
Resistance**

Abstract:

Small ruminant lentiviruses (SRLVs) cause chronic and progressive diseases in sheep, with visna–maedi representing one of the most important clinical syndromes. These infections may lead to considerable economic losses of up to 40% in commercial flocks [1]. As no effective treatment or vaccine is currently available, control actions rely on serological testing and removal of infected animals. Genetic susceptibility to visna–maedi virus (VMV) infection has been strongly associated with polymorphisms in the TMEM154 gene [2], while additional host genes seem to also contribute. Among these, Toll-like receptors (TLRs), and particularly TLR9, exhibit polymorphisms that have been associated with differential host responses to SRLV [3,4]. The aim of the present study was to characterize genetic variation in the TMEM154 and TLR9 genes in Karagounikosheep from Olympus area, Greece. Sequence analysis of TMEM154 revealed the presence of both K and E alleles at the E35K locus of TMEM154, along with further well-known polymorphisms (N70I, I74V) and the T44M variant. Analysis of TLR9 identified all major polymorphisms previously linked to SRLVresistance (R447Q, A462S, G520R), occurring at variable frequencies. The detection of polymorphisms in TMEM154 and TLR9 provides an important first step toward defining genetic resistance profiles against SRLVand supports the application of selective breeding for the control of VMV in Greek sheep.

Funding: Action "16626 Economic Transformation of the Agricultural Sector", in the Subproject "SUB5 GENETIC IMPROVEMENT OF ANIMALS (Code OPS TA 5164849)" of the Action Economic Transformation of the Agricultural Sector of the Recovery and Resilience Fund, which is funded by the European Union - NextGeneration EU (MIS 5164849348).

Keywords:

Sheep Genetics, Visna Maedi Virus, Polymorphisms, Genetic Resistance

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**The Contents of Selected Organic Biocompounds in Waste Pressings of Varietal Grapes****Abstract:**

In the waste grape extracts of both white and red grapes from the vineyard and wine production in village of Tajna located in the Slovak Republic we defined the amount of selected important bioorganic components: reducing sugars, crude protein, L-ascorbic acid and in case of red grapes also anthocyanins. The aim of our research was to find out amount needed to eventual deployment of those waste grape extracts in a consecutive production of health food. In dried grape extracts, the amount of reducing sugars was measured at the level between 0.0115-0.5028 mg/g, crude protein 237.8-517.3mg/g, ascorbic acid 1.249-4.822mg/g and anthocyanins 0.6445 – 3.7158 mg/g. “Devín” was the only sample of white grapevine in our research that reached the highest amount of reducing sugars and C vitamin, but it also had the smallest amount of crude protein. “Merlot” had the highest amount of crude protein and anthocyanins, “Cabernet Sauvignon” had the smallest amount of reducing sugars and C vitamins. The amount of anthocyanins was recorded at slightly smaller level in comparison with other published works because it is an organic matter that is also well dissolvable in water and our samples were technologically disposed of much water.

Keywords:

Grape, Sugar, L-Ascorbic Acid, Protein, Anthocyanin

References:

Vildan, E., Ismail, T., Selman, T. (2020). Optimization of green extraction of phytochemicals from red grape pomace by homogenizer assisted extraction. *Journal of Food Measurement & Characterization*, 14(1), 39-47

Biography:

Dr. Pavol Trebichalský, PhD. is a assistant professor at the Slovak University of Agriculture in Nitra. His research is focused on the analysis of inorganic and organic components in plants and soil. He has been working for two years on the production of an APVV "Valorization of bioactive components from by-products of grape processing and their use in innovative foods", in which he explores new uses for these grape marcs for food production.

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**Selected Biologically Active Compounds with Antioxidant Properties Determined in Extracts from Grape Pomace *Vitis Vinifera* L. from the Slovak Wine Region****Abstract:**

Wine production generates by-products representing 10–30% of the processed grape weight, consisting of leaves, pomace, stems, and lees [1]. Their valorisation is a sustainable strategy that reduces environmental concerns and promotes efficient resource use [2].

The total polyphenol content (TPC) and the content of phenolic compounds (myricetin, quercetin, kaempferol, rutin, resveratrol, gallic acid (GA), cinnamic acid (CA), p-coumaric acid (p-CA), and sinapic acid (SA)) were determined in grape pomace (GP) extracts of four *V. vinifera* L. cultivars (Dunaj – D, Cabernet Sauvignon – CS, Cabernet Franc – samples CF-1 to CF-3, Rizling Vlašský – RV). Grape pomace was used for the analysis from the 2024 harvest from the Nitra wine region of Slovakia. The total polyphenol content (TPC) was determined using the colourimetric method [3], and phenolic substances were determined using the method described by Lidikova et al. [4]. The Kruskal-Wallis test using Statgraphics statistical software (Centurion XVI.I, USA) was used for the statistical evaluation of the results.

TPC ranged from 3.66 (cv. CF-1) to 43.69 mg/g DW (cv. RV). The lowest contents of the analysed phenolic compounds were found in the cv. CF samples. In the pomace extracts of CF-1 (CF-2; CF-3; and RV, respectively), the contents of myricetin, CA, and SA (CA and SA; p-CA; and p-CA, respectively) were below the limit of detection. The highest contents of phenolic compounds were determined in GP extracts of cv.

Dunaj: quercetin – 246.4, kaempferol – 28.7, rutin – 83.4, resveratrol – 33.6, GA – 147.0, CA – 0.698, p-CA – 29.0, SA – 17.7 mg/kg DW. The myricetin content was highest in the GP extracts of cv. CS (246.4 mg/kg DW). The variability of the results reflects the influence of several factors – grapevine cultivars, climatic and geographic factors, the location of cultivation, etc. Based on the LSD test, we can state that there are statistically significant differences in the mean contents of the analysed compounds.

Keywords:

Grape Pomace, Polyphenols, Flavonols, Phenolic Acids

References:

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Biography:

Prof. Ing. Janette Musilová, PhD.: her research focuses on the issues of biologically active, nutritional, and antinutritional substances in raw materials of plant origin. Her work concentrates on the research of plant-based food raw materials with a tradition of cultivation in Slovakia, as well as on the research of new minor crops. She is the author/co-author of more than 300 publications, including 63 scientific papers in journals indexed in CCC, WoS, SCOPUS, which have received over 1100 citations – 862 citations in foreign and domestic publications registered in the Web of Science and SCOPUS citation indexes, HI: 12.

She has been/is the principal investigator and co-investigator of several scientific-research and/or educational international and national projects.

Tumen Wuliji^{1*},

C. Ke², M. Imranuzzaman¹, K.C. Dipsana¹, F. Haruna¹, and K. Adams¹

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**Anthelmintic Effect of Plant Extracts on Larvae Mortality In Vitro Experimentation****Abstract:**

Gastrointestinal nematode infection poses significant challenges to small ruminant livestock production including sheep and goats. The objective of this study is to evaluate selected plant varieties for putative anthelmintic properties and effect on cultured larvae in vitro experiments. Thirty-six varieties of plants were harvested from farm fields or grown on soil beds in green house facility. Plants were harvested and collected samples at flowering stage and stored at – 40°C for further processing. Frozen plant samples were freeze-dried, ground (1mm), and extracted with water for anthelmintic bioactive compounds. Twelve plant varieties' aqueous extracts were selected for in vitro larvicidal experimentations. The selected varieties were either of forage plants, namely bird foot trefoil (*Lotus corniculatus*), common chicory (*Cichorium intybus*), sainfoin (*Onobrychis vicifolia*), purple prairie clover (*Dalea purpurea*), Sunn hemp (*Crotalaria juncea*) and lespedeza (*Lespedeza cuneata*) or ethnomedicinal plants include goose foot (*Chenopodium album*), goat weed (*Ageratum conyzoides*), sweet wormwood (*Artemisia annua*), callaloo (*Amaranthus viridis*) and broadleaf plantain (*Plantago major*). The aqueous extracts were prepared by immersing and soaking 3 g of dry plant material in 30 mL deionized water for 24 hours, followed by centrifugation to obtain the supernatant. Nematode parasitic larvae were obtained by hatching parasitic eggs from feces of sheep or goats in coproculture dishes at 27°C for 7-10 days in incubators. The larvae were recovered using the Baermann technique with modification. Live larvae numeration (n/ml) was conducted at the initial (0 time) for resource larvae pool.

In vitro larvicidal experiment was conducted at two treatment dose levels (low and high) for three-time intervals each with three replicates. The experiment was conducted by exposing 100 larvae in each well of 5 ml aqueous extract suspension for 12, 24, and 48 h continuously under room temperature (22°C). Negative control (water) and positive control (Eprinomectin) were included for each time interval and treatment level, respectively. All twelve plant aqueous extracts showed a significantly higher larvae mortality rate compared to the negative control at 12, 24, and 48 h for both low and high treatment levels ($P < 0.01$). Mean mortality rate in low level extract treatment was 40, 66 and 87% compared to 61, 83, and 95% in high level extract treatment ($P < 0.05$) at 12, 24, and 48 respectively. There were marked variations in mortality rate recorded among plant varieties which ranked the highest for bird foot trefoil and sweet wormwood. The results indicated that these plant varieties contain an effective anthelmintic component which can be utilized as a gastrointestinal parasite control reagent.

Keywords:

Gastrointestinal Parasite, Goat, in Vitro, Larvae Mortality, Plant Extract, Sheep.

Biography:

Dr. Tumen Wuliji is professor of animal science and program director at college of agriculture, environmental and human sciences, Lincoln University of Missouri. He graduated from Inner Mongolia Agriculture University in animal biotechnology (1977) and received a doctorate degree in animal science from University of New South Wales (Aust. 1989) and subsequently a postdoctoral training at AgResearch (NZ). Then he worked at MAFTech and AgResearch (1989-1998 NZ) and taught at Langstan University (1999-2005 OK) and University of Nevada (2006-2010 NV) continuously. He started current appointment at Lincoln University of Missouri since 2010. He has developed and taught more than ten undergraduate and graduate courses including biology, cell biology, parasitology, animal nutrition, small ruminant production, rangeland management, animal breeding, and genetics at these institutes. Meantime, he has supervised more than two dozen graduate research students (MS/PhD) and postdoc research fellows. His present research interests include small ruminant animal selection for gastrointestinal parasite resistance, organic meat animal production, livestock grazing agroforestry and management programs. He has published more than 250 publication and communications including refereed articles, proceedings, book chapters and abstracts.

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Equine Welfare Therapies

Abstract:

This article presents the basic and essential concepts that comprise equine physiotherapy and rehabilitation, with the aim of reviewing the used therapeutic techniques of physiotherapy and rehabilitation of musculoskeletal injuries.

The article consists of a literature view, followed by the description and short follow-up of specific clinical cases and physiotherapy approaches for treatment of musculoskeletal injuries, and pain management, aiming at the overall well-being of the horse.

Positive results were obtained with the therapies used. The presented chronic pain case maintains maintenance physiotherapy sessions, having overcome the acute phase.

The therapies are shown to be beneficial for athletic improvement and pain management, with immediate manifestations of welfare improvement after each session.

In conclusion, when applied properly and in conjunction with traditional medicine, these therapies achieve favorable results in the management of pain and musculoskeletal injuries.

Keywords:

Wellness; Painmanagement; Triggerpoint; TENS; Manualtherapy.

Quetzali Xicotencatl*

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**Economic Viability And Climate Resilience In Rural
Communities Of Mexico: The Case Of Bean Cultivation
(Phaseolus vulgaris) In San Juan Tezontla, Municipality Of
Texcoco, State Of Mexico****Abstract:**

This research examines the role of agroecology as a comprehensive approach to promoting economic viability and climate adaptation in rural communities in Mexico, using common bean (*Phaseolus vulgaris*) production as a reference. In response to the challenges faced by conventional agricultural systems, such as dependence on external inputs, environmental degradation, and climate vulnerability, agroecology emerges as a sustainable, equitable, and culturally relevant alternative.

The main objective of this study is to identify and assess agroecological practices, including the use of compost, organic fertilizers, biofertilizers, crop rotation, and the conservation of native seeds, in bean production units located in selected rural areas of Mexico. Methodologically, a quantitative-descriptive study was conducted based on a literature review and case analysis documented by academic institutions and specialized organizations.

The evidence indicates that the adoption of agroecological practices not only reduces production costs and dependence on imported chemical fertilizers, but also strengthens productive autonomy, improves soil health, and enhances adaptive capacity to climate-related events such as droughts. These effects contribute to greater income stability for producers. Additionally, agroecology encourages community participation and restores the value of traditional knowledge.

It is concluded that agroecological practices represent a viable pathway for sustainable rural development in contexts characterized by limited resources and high exposure to climate risks. However, their expansion requires the design of integrated public policies, access to differentiated markets, and the strengthening of local knowledge and skills, in order to ensure their effective implementation.

Keywords:

Agroecology, Common Bean, Economic Viability, Climate Change, Rural Communities

Biography:

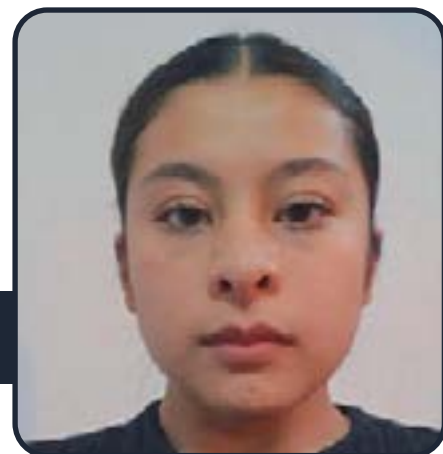
I am currently an undergraduate student at the Universidad Autonoma Chapingo, pursuing a degree in Ingeniería en Economía Agrícola. My research interests focus on Agricultural Economics. I am particularly passionate about the intersection between community-based agricultural practices and environmental policy, particularly in rural regions.

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2Investigadora por México Secretaría de Ciencia,
Humanidades, Tecnología e Innovación, Posgrado en
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Analysis of Agricultural Diversification Strategies Through Investment Portfolios in Silvopastoral Systems in Mexico

Abstract:

Silvopastoral system represent a key strategy for achieving diversified, profitable, and environmentally sustainable agricultural production. The integration of timber and fruit trees with forage crops and livestock activities allows for optimal land use and generates both economic and environmental benefits for production units. The aim of this study was to compare diversification strategies through an investment portfolio insilvopastoral systems adapted to the conditions of the states of Chiapas and Veracruz, Mexico. Productive combinations were designed that include mahogany, forage maize, pasture grasses, and tropical fruits such as mango and lime, to assess their risk and profitability. The results showed that the portfolios achieved acceptable levels of profitability with moderate risk, demonstrating that this strategy can contribute to income diversification for producers and to increasing the productivity of natural resources, thereby strengthening sustainable rural development in both regions.

Keywords:

Silvopastoral Systems, Production Sustainability, Investment Portfolio, Rural Development, Productive Diversification, Sustainable Agricultural Production.

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Biography:

I am currently pursuing a degree in Agricultural Economics Engineering at the Autonomous University of Chapingo in Texcoco, Mexico. I am 21 years old and have a strong interest in the study and analysis of agricultural production systems, particularly those that strive to be both environmentally sustainable and socially inclusive. Throughout my academic journey, I have had the opportunity to visit various regions of Mexico, which has given me valuable insight into the country's diverse agricultural practices and production chains. These experiences have broadened my perspective and deepened my commitment to contributing to development models that are more responsible, equitable, and community-oriented. In addition, I actively participate in environmental education projects at primary schools, where I help foster ecological awareness from an early age.

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Mexican Cocoa in International Markets

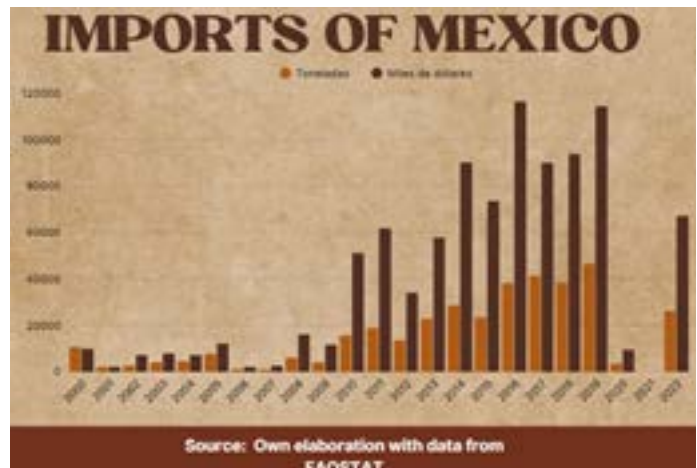
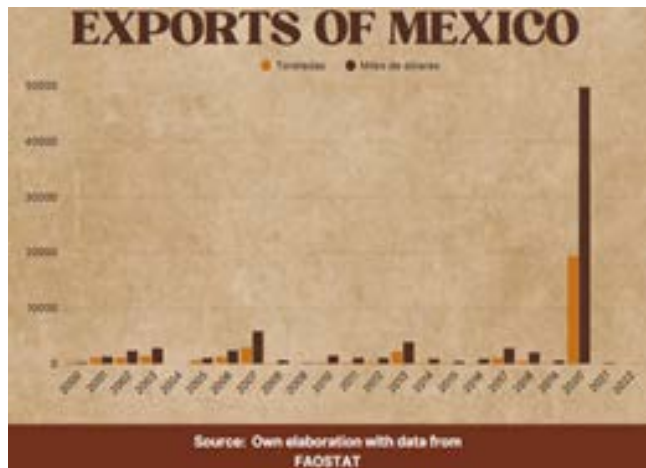
Abstract:

It is believed that cacao arrived in Mexico due to the migration of people and the exchange of products from different societies in South America and Mesoamerica. The first traces of this seed date back to 1900 and 1800 BC, in the states of Chiapas and Veracruz. It was there that the natives associated the heart-shaped fruit with the underworld and blood, and it was used in rituals and for the exclusive consumption of the upper classes, merchants, and warriors. Years later, with the arrival of the Spanish, cacao and one of its main derivatives, chocolate, gradually spread throughout the world.

The main cocoa-producing and exporting countries are the Ivory Coast, Ecuador and Ghana, with these three countries accounting for approximately 56.8% of global exports. Meanwhile, Mexico ranks 71st in cocoa exports, with less than 1% of exports, indicating that it is unable to compete with larger countries in cocoa sales.

The value of Mexican cocoa exports has fluctuated significantly over the years. In 2020, the export value was \$1.2 million; in 2022, it was \$1.7 million. This steady growth demonstrates the promising competitiveness of Mexican cocoa in foreign trade.

Now, regarding the international market, it is important to mention that cocoa prices are being somewhat volatile in 2024. It is also said that in 2024 the global cocoa market will suffer a deficit, since the main cocoa producing countries in West Africa (Ghana and Ivory Coast) register lower yields due to the aging of cocoa trees, disease, and bad weather due to climate change.



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Biography:

My name is Gabriel Said Moreno Gonzalez, I am 20 years old. I live in Texcoco, State of Mexico, where I am student at the Autonomous University of Chapingo. I am currently studying agricultural economics engineering where I am passionate about seeing the economic part with the agricultural part from theoretical and practical points of view. In my personal life I have enjoyed carrying out different life projects, such as leading a healthy life, learning to play the piano, completing Cambridge English certification courses and spending time with the people I love.

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Transforming Coconut Husk Waste Into Sustainable Livelihoods: The KoredoKoir Model

Abstract:

Coconut farming is a key economic activity in coastal Kenya, yet it generates significant waste, with over 49,000 metric tons of coconut husk discarded annually. In Kwale County alone, approximately 20 tons of husk waste are produced daily, most of which is burned or improperly disposed of, contributing to environmental degradation and carbon emissions. At the same time, coconut farmers receive limited economic returns beyond the sale of raw coconuts.

KoredoKoir addresses this dual challenge by transforming coconut husk waste into value-added, eco-friendly products, including biodegradable doormats, ropes, and biochar-enriched coco peat. By extracting coir fiber and repurposing the remaining material into a nutrient-rich growing medium, the initiative reduces environmental waste while creating new income streams for farmers. The biochar-enriched coco peat further enhances water retention and soil quality, offering a sustainable alternative for farmers facing soil degradation and water scarcity.

This model contributes to sustainable agriculture by supporting soil-independent farming practices such as vertical gardening and greenhouse cultivation. It also strengthens local supply chains by connecting farmers, manufacturers, and consumers in a circular economy framework. KoredoKoir aligns with global sustainability goals by addressing waste management, food security, and economic empowerment. KoredoKoir demonstrates a scalable, community-driven solution to coconut waste management challenges in Kenya and beyond.

Keywords:

Coconut Husk Waste, Coir Fiber, Coco Peat, Sustainable Agriculture, Circular Economy, Kenya

References:

[1] Kenya Coconut Development Authority (KCDA), Coconut Industry Report (2022).

Biography:

Victoria Ochieng is a third-year student at Davidson College in North Carolina, majoring in Economics and Environmental Studies, and a co-founder of Koreda Koir, a social enterprise transforming agricultural waste into sustainable products. Raised in rural Western Kenya, her upbringing shaped her commitment to improving farmer livelihoods and advancing environmentally responsible solutions.

Her work focuses on sustainable food systems, post-harvest loss, and community-centered agricultural innovation. She has worked closely with smallholder farmers, particularly within coconut value chains, developing solutions that bridge research, entrepreneurship, and lived farmer experience.

Victoria has participated in global forums such as the Harvard Africa Business Conference and has received recognition through initiatives including the Avinger Impact Fund, Global Engagement Summit Pitch Competition, and Projects for Peace. Through her work, she advances scalable solutions at the intersection of environmental conservation, economic empowerment, and resilient food systems.

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Rapid, Cost-Effective and Reliable Semen DNA Extraction Method for Quantification of X and Y Chromosome-Bearing Spermatozoa

Abstract:

This study aims to optimize ovine semen DNA extraction for the application of quantifying X and Y chromosome-bearing spermatozoa (X and Y-CBS). A pooled frozen ovine semen sample was divided into four groups (n=10/group, suspension of 30×10^6 spermatozoa cells). Three cell lysis methods were designed to evaluate the genomic DNA (gDNA) compared to the standard DNA extraction method. Quantitative Polymerase Chain Reaction (qPCR) SYBR Green assay was used to measure gDNA from the extraction method using 18S rRNA (a housekeeping gene). The ratio of Y and X – CBS was assessed using a qPCR TaqMan assay of Y-specific (SRY) and X-specific (PLP) genes. A gBlock Gene fragment was used to develop the standard curve of both SYBR Green and TaqMan assays. The result showed that 24 h + 10 μ L of DTT method (standard) yielded the highest amount of extracted gDNA, which was significantly greater than all other methods ($p < 0.05$). Meanwhile, the ratio of Y and X-CBS (Y:X ratio) differed significantly among methods ($p < 0.05$) by the 24 h + 10 μ L DTT (Control) and the 1 h + 10 μ L DTT treatments yielded comparable Y:X ratios (1.32 ± 0.32 and 1.30 ± 0.21 , respectively), indicating no significant difference between these methods. In contrast, 1 h + 20 μ L DTT and 3 h + 20 μ L DTT resulted in significantly lower Y:X ratios (0.97 ± 0.22 and 0.97 ± 0.17). These findings indicated that the interaction between the Dithiothreitol (DTT) concentration and incubation period is critical for achieving the release of spermatozoal DNA. Moreover, the amount of DTT is likely to affect the decondensation of X- and Y-chromosome-bearing spermatozoa differently.

In conclusion, optimizing the semen DNA extraction method, the 1 h + 10 μ L DTT method is less time-consuming and reliable, making it suitable for routine/field use for quantifying X and Y-CBS.

Keywords:

Semen DNA Extraction, X and Y Chromosome-Bearing Spermatozoa Ratio, QPCR.

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Prepartum and Postpartum Biomarkers Associated with Transition Disease Risk in Dairy Cows

Abstract:

The transition period in dairy cows is characterized by substantial metabolic changes that increase susceptibility to disease. The objective of this study was to evaluate associations between prepartum and early postpartum biomarkers and the risk of transition diseases. Blood and milk samples were collected from commercial Danish dairy herds using a standardized protocol. Prepartum blood samples were obtained within 42 d before calving, and postpartum milk samples were collected within the first 21 d in milk.

Biomarkers included indicators of energy balance, liver function, and mineral status, including nonesterified fatty acids (NEFA), β -hydroxybutyrate (BHB), glucose, cholesterol, calcium, magnesium, point-of-care blood analytes, and milk metabolites. Data were filtered using biologically plausible ranges, and complete-case datasets were analyzed. Associations with mastitis, metritis, ketosis, and lameness within 60 d in milk were evaluated using mixed-effects regression models with herd included as a random effect.

Between-herd variability was observed across all biomarker groups. Lifetest analytes showed the greatest clustering (ICC = 0.10–0.42), with blood urea nitrogen (BUN) highest (ICC = 0.42). Serum biomarkers also demonstrated moderate to high clustering, particularly log-cholesterol (ICC = 0.31), NEFA (ICC = 0.29), and BHB (ICC = 0.22). Milk metabolites showed moderate clustering (ICC = 0.06–0.22), with highest values for isocitrate (ICC = 0.22) and log-glutamate (ICC = 0.16). Inclusion of herd improved model fit and was necessary for accurate estimation of biomarker–disease relationships.

Elevated NEFA and BHB were associated with increased odds of transition diseases, consistent with impaired energy balance. Overall, these results support the use of blood- and milk-based biomarkers, including point-of-care analytes, for identifying at-risk cows. Accounting for herd-level variability is essential for developing reliable biomarker-based monitoring strategies to improve dairy cow health and antimicrobial stewardship.

Keywords:

Transition Cow Disease, Metabolites, Biomarkers, Dairy.

Biography:

T. J. Almand is a PhD candidate in Animal Biology at the University of California, Davis, specializing in dairy herd health, antimicrobial stewardship, and biomarker-based disease predictions. Her research focuses on improving selective dry cow therapy (SDCT) through integration of epidemiology, diagnostics, and data-driven decision-making. She is currently completing the California–Denmark Innovator Fellowship at Aarhus University, where her work emphasizes translational approaches to precision livestock health and sustainable dairy production systems. Her long-term goal is to develop practical, field-ready tools that improve animal health, reduce antimicrobial use, and support global agricultural sustainability.

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