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Iulia A. BUNDURUŞ [1], Igori BALTA[1], Ioan PET[1], Lavinia STEF[1], and Nicolae CORCIONIVOSCHI*

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Abstract:
Campylobacter jejuni and Campylobacter coli are among the leading bacterial causes of foodborne gastroenteritis worldwide, with poultry representing a major source of human infection. Their epidemiological success is driven by a combination of virulence traits, persistence mechanisms, and antimicrobial resistance. A key factor in their survival is the ability to form biofilms, which supports survival in poultry production environments and on abiotic surfaces such as stainless steel, plastic, and glass, while also increasing tolerance to environmental stress and antimicrobials. Several genes are closely associated with these processes, including flagellar genes such as flaA, flaB, and flaG, adhesin-related genes such as cadF and flpA, and virulence-associated markers such as hcp. In addition, molecular typing approaches, including multilocus sequence typing, have shown that Campylobacter populations are highly diverse, with variation in accessory virulence determinants and substantial genomic flexibility consistent with an open pan-genome. Findings from poultry-associated isolates in Romania further support this broader picture, showing the coexistence of core virulence factors, antimicrobial resistance genes, and species-related differences between C. jejuni and C. coli. Overall, these data highlight the importance of integrating virulence, biofilm formation, and population diversity into surveillance and control strategies aimed at reducing transmission and limiting public health risk.
Keywords: Campylobacter; virulence; biofilm formation; antimicrobial resistance; multilocus sequence typing; MLST.

2. Agricultural Environmental Exposures Shape the Oral Microbiome and Cognitive Function: Insights from a Multi-Omics Framework

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Abstract:
Agricultural environments represent a major source of human exposure to complex mixtures of chemical agents, including pesticides, fertilizers, and other pollutants capable of altering the microbiome. Although their systemic health effects are increasingly recognized, the impact on the oral microbiome and its potential association with cognitive function remain insufficiently elucidated. In this review, we explore the hypothesis that chronic exposure to agricultural environmental factors modulates the composition and metabolic activity of the oral microbiome, thereby contributing to systemic inflammation and alterations in neurocognitive function. Through a multi-omics framework integrating metagenomics, metabolomics, and transcriptomics, we aim to characterize changes in oral microbial communities and associated biochemical pathways under conditions of exposure compared to non-exposure. Particular emphasis is placed on microbial metabolites involved in neuroinflammatory processes, as well as on mechanisms affecting blood-brain barrier integrity, with downstream effects on oral dysbiosis, inflammatory biomarkers, and cognitive performance parameters. The literature reviewed suggests that environmental exposures linked to agricultural practices may induce distinct alterations in the oral microbiome, correlated with disrupted metabolic profiles and early markers of cognitive impairment. These findings highlight the oral microbiome as a potential mediator between environmental exposure and brain health. This integrative framework underscores the value of multidisciplinary approaches in elucidating complex exposure–microbiome–brain interactions and may contribute to the development of future strategies for risk assessment, prevention, and therapeutic intervention.
Keywords: microbiota–brain axis, neuroinflammation, metabolomics, oral dysbiosis.

3. Epigenetic Regulation of Cognitive Function: Molecular Mechanisms and Environmental Influences

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Abstract:
Cognitive function arises from complex interactions between genetic, molecular, and environmental factors, with epigenetic regulation playing a pivotal role in modulating gene expression without altering DNA sequence. This paper explores the contribution of epigenetic mechanisms—particularly DNA methylation, histone modifications, and non-coding RNAs—to the regulation of neural processes underlying learning, memory, and overall cognitive performance. Emerging evidence suggests that these molecular modifications are highly dynamic and responsive to environmental stimuli, including stress, nutrition, and early-life experiences, thereby linking external factors to long-term changes in brain function. We review current findings from both animal models and human studies that demonstrate how epigenetic alterations influence synaptic plasticity and neuronal connectivity, which are essential for cognitive adaptability. Special attention is given to the reversibility of epigenetic marks and their potential as therapeutic targets in cognitive disorders and neurodegenerative diseases. Furthermore, the paper discusses how dysregulation of epigenetic processes may contribute to impaired cognition and highlights the role of environmental interventions in mitigating such effects. By integrating insights from molecular biology, neuroscience, and environmental research, this study underscores the importance of epigenetic regulation as a key interface between genes and the environment in shaping human cognitive capacity. These findings open new avenues for the development of personalized strategies aimed at optimizing cognitive health and performance.
Keywords: cognitive function, molecular mechanisms, environment.

4. Rumen-Protected Amino Acids in Precision Nutrition of Dairy Cows: From Protection Methods to Production Efficiency

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Abstract:
Amino acids protected from ruminal degradation are an essential component of precision nutrition for ruminants, enabling the optimization of essential amino acid utilization under conditions of excessive ruminal degradation. Methionine, lysine, threonine, and tryptophan are the main essential amino acids identified as limiting factors for high-yielding dairy cows raised in intensive systems. Supplementing feed rations with rumen-protected amino acids allows for a reduction in the crude protein content of the rations, while maintaining or even improving the animals' productive performance and reducing the negative environmental impact associated with cattle breeding and rearing activities. Numerous scientific studies have reported that rumen-protected amino acids have significant effects on liver metabolism, the immune system, and the physiological adaptation of animals during transition periods. At the same time, certain essential amino acids, such as tryptophan, may be involved in metabolic processes that contribute to the production of functional foods, such as milk with a high melatonin content. However, the effectiveness of protected amino acids is influenced by the actual fraction that reaches the intestine, the animal's stage of production, and its physiological condition. In this paper, we conducted a critical and integrative review of the scientific literature available through 2026 on methods for preserving essential amino acids and their effectiveness in precision nutrition for dairy cows. The results of the analysis presented in this paper have made it possible to identify the main limitations of the production and use of protected amino acids, particularly with regard to the standardization of methods, the assessment of bioavailability, and the adaptation of supplementation to the physiological stage of the animals, as well as to formulate future research directions for the development of sustainable and efficient nutritional systems.

Keywords: Rumen-protected amino acids, precision nutrition, tryptophan, cow's milk with melatonin, milk production.

5. Comparative Study of Natural and Commercial Lemon Juices Based on Physicochemical Properties and FT-IR Spectral Analysis

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Abstract:
Lemon juice is one of the most consumed natural beverages worldwide, due to its high content of vitamin C, phenolic compounds, and aromatic substances. During the processes of extraction, transportation, storage, and packaging, the physicochemical properties of the juice play a crucial role in maintaining its quality and stability.
Physico-chemical analyses represent an important stage in the quality control of food products. In the food industry, the quality of a product is not limited to its organoleptic appearance (taste, smell, texture), but is also defined by physico-chemical parameters such as pH, density, sugar content.
The properties of liquids such as viscosity and surface tension are two fundamental parameters that influence fluid behavior, and in the case of lemon juice, they contribute to pulp stability, the degree of homogenization, foaming, as well as the sensory perception of the product. The study of these quantities allows the characterization of lemon juice as a complex, non-ideal fluid, with non-Newtonian behavior in some cases.
In this work, 4 types of commercially purchased lemon juice were analyzed and a comparison was made between the results obtained from them and those from natural lemon juice. For samples of lemon juice were analyzed over three days, investigating parameters such as density, pH, sugar concentration, surface tension and viscosity.
The results revealed significant changes in density and viscosity, correlated with composition and sugar concentration. Surface tension varied significantly between the five types of juice.
In parallel, data obtained from a questionnaire on consumption preferences provided a complementary perspective on consumer behavior. The study highlights the importance of physico-chemical characterization of juices in order to choose products that have a lower sugar content and that help to properly hydrate the body.
For a detailed physicochemical analysis of the sample, FT-IR spectroscopy was employed, and the characteristic spectrum of the lemon used for obtaining the natural juice was recorded

Keywords: physicochemical analysis, density, viscosity, surface tension.

6. Control of Respiratory Pathogens in Swine Herds Under Farm Production Conditions

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Abstract
In recent decades, pig farms have experienced widespread outbreaks of the Porcine Respiratory Disease Complex (PRDC), which has become a significant health problem across all stages of pig production. PRDC represents a simultaneous infection of lung tissue with multiple respiratory pathogens and is a collective term for pneumonias in pigs with multifactorial etiology. The isolated pathogens vary both between and within different production categories. Predisposing factors for the development of bacterial pneumonia include stress, viral infections, and pulmonary edema. Harmful gases can impair the defense mechanisms of the respiratory system, making pigs more susceptible to secondary bacterial infections. Ammonia is frequently present on pig farms, particularly in facilities with inadequate ventilation. One of the most common viruses that predisposes pigs to bacterial pneumonia is the swine influenza virus. The presence of respiratory diseases can be confirmed through clinical examinations in fattening units and by examination of respiratory organs at slaughter. Control of the porcine respiratory disease complex is complicated. Practical experience has shown that a primary pathogenic agent, such as mycoplasma or a virus, is often followed by additional pathogenic agents, resulting in secondary infections. In most cases, the consequences of secondary infections are more severe than those of primary infections. The importance of the respiratory disease complex lies in the interaction between respiratory pathogens. Understanding these interactions is essential for implementing effective control measures. Respiratory diseases in pigs occur when infectious agents are present in the immediate environment or when the defense mechanisms of the respiratory system become weakened due to various factors. Detection and control of production diseases of bacterial, viral, or parasitic origin represent an economic necessity for producers rather than a legal obligation. This paper aims to provide an overview of research on respiratory pathogens in pigs

Keywords: respiratory pathogens, pig farms, production

Acknowledgement: The article is supported by funds from the Ministry of Science, Technological Development, and Innovation of the Republic of Serbia (Contract No. 451-03-136/2025-03/200143).

7. A Retrospective Study on the Evolution and Outcomes of Oocyte Pick-Up (OPU) Procedures in Dairy Cattle

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Abstract:
Oocyte pick-up (OPU) is now widely recognized as a key technique in bovine reproductive biotechnology, allowing the efficient collection of oocytes from live donors for in vitro embryo production (IVP). Since it was first introduced in the late 1980s as a transvaginal ultrasound-guided oocyte aspiration method, the technique has undergone continuous refinement, both technically and biologically. Early efforts focused mainly on ensuring that the procedure was safe and repeatable, while later studies improved important aspects such as needle design, aspiration pressure, and ultrasound equipment. With time, OPU has developed into a reliable and flexible procedure that enables repeated oocyte collection without significantly affecting ovarian function. Progress in understanding follicular dynamics and hormonal control has further improved both oocyte yield and developmental potential, especially through better synchronization and stimulation protocols. At the same time, it has become clear that OPU efficiency is influenced by a combination of animal-related factors, such as breed, follicular reserve, and metabolic status, as well as technical aspects including operator skill, equipment, and collection frequency. More recent research highlights the growing role of OPU within large-scale IVP programs, where it supports faster genetic progress and improved reproductive performance in dairy herds. Current applications also include the use of sex-sorted semen, repeated collection sessions, and ongoing optimization of culture conditions to increase blastocyst development rates. However, variability in oocyte quality and embryo outcomes remains an important limitation. Overall, OPU has evolved from an experimental approach into a routine and essential tool in bovine reproduction, with ongoing research aimed at further improving its consistency, efficiency, and integration with emerging technologies.

Keywords: transvaginal ultrasound-guided follicular aspiration, ovarian physiology, oocyte recovery, assisted reproductive technologies.

8. The future of reproductive management in dairy cattle

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Abstract:
Reproductive management in dairy cattle is undergoing a substantial shift driven by precision technologies, data integration, and advances in reproductive biology. As fertility remains a key determinant of productivity and profitability in dairy systems, future management strategies are increasingly focused on improving the accuracy and timeliness of reproductive decisions. This article reviews the main developments expected to shape reproductive management in dairy cattle, with particular emphasis on automated estrus detection, timed artificial insemination protocols, genetic selection for fertility, and the use of biological and performance data to support targeted decision-making. Wearable sensors, automated activity monitoring systems, and artificial intelligence-based tools are enhancing the ability to detect estrus and identify cattle with suboptimal reproductive status, thereby improving insemination timing and conception outcomes. In parallel, synchronization programs and combined sensor-assisted breeding strategies offer more flexible and efficient approaches to herd reproductive management. Genetic improvement for fertility, together with the identification of new phenotypes relevant to reproductive performance, may further accelerate long-term progress. The review also considers emerging regenerative approaches, including platelet-rich plasma, as potential adjunctive therapies for selected cases of reproductive dysfunction. Overall, the future of reproductive management in dairy cattle will likely be defined by a transition from standardized protocols toward integrated, data-driven, and cow-specific strategies that improve reproductive efficiency, animal health, and herd sustainability.
Keywords: fertility, precision livestock farming, estrus detection, timed artificial insemination, platelet-rich plasma, reproductive efficiency.

9. Evaluation of birth weight in Simmental beef calves under different breeding conditions

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Abstract:
The aim of the study was to evaluate the calf birth weight (BW) of the Simmental beef calves under different breeding conditions of the Slovakia according to sire, year of birth, rating period, sex, and breed type. In this study was used the records from 2022 to 2024 and 1,209 calves from Simmental beef cattle for the birth weight (BW). The

average value of BW of calves was 37.94±6.0 kg ranging from 30 to 64 kg. In the evaluated set, the most recurrent mean weight was 35 kg (approximately 31,2%). According to the years of evaluation, we found the average birth weight for calves was 38.61±6.27kg in 2022, 38.55±6.32 kg in 2023 and 36.23±4.77 kg in 2024, respectively. The highest average weight was recorded in herd C namely 47.85±4.79kg and the lowest in herd G namely 30.71±1.82. A linear model (GLM) was used to evaluate the influence of factors on calf birth weight, in which factors such as the influence of the sire, breed type, year-season of evaluation, year of birth, and calf sex were assessed. In conclusion, we can state that the greatest effect is that of the father, followed by the effect of breed type and the combined effect of the year and season of the calf's birth. These factors were also statistically significant ($P < 0.001$). . This work was supported by the Slovak Research and Development Agency (Projects No. APVV-20-0161, VEGA No. 1/0316/25) and project KEGA No. 027SPU-4/2025.

Keywords: beef calves, birth weight, factors, coefficient of determination,

10. Assessment of the relationship between production and reproductive traits in Slovak Simmental dairy cows in the Orava Region

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Abstract:
The aim of the study was to evaluate was assessment of the relationship between production and reproductive traits in Slovak Simmental dairy cows in the Orava Region. In this study was used the records from 2020 to 2025 and 834 dairy cows (2,352 lactation) from Slovak Spotted cattle. The average of traits milk production was 9,757.1±2418.1 kg of milk, 4.3±0.42% of fat, 3.6±0.21% of proteins and 4.9±0.20% of lactose, as well as reproductive traits such as age at first calving (AFC) 824.86±6.74 days and calving interval (CI) 382.6±57.3 days. In the years 2020 up to 2025 was found a higher average value of the traits of milk production in kg as well as improving reproductive indicators, namely AFC and CI. Correlation between evaluated AFC and milk components were lower positive and statistically highly significant, scilicet between age at first calving and kgs of milk, fat, proteins, lactose was r= 0.1013, r=0.0862, r=0.0636 and r=0.0947 and there was a low negative correlation with milk composition components, namely % of fat, % of proteins, % of lactose was r=-0.02854, r=-0.17978, and r=-0.0193. Similar trend was also observed between the calving interval and traits of milk production. These values were not statistically significant. This work was supported by the Slovak Research and Development Agency (Projects No. APVV-20-0161, VEGA No. 1/0316/25) and KEGA No. 027SPU-4/2025.

Keywords: dairy cows, milk traits, reproduction traits, correlation, factors, coefficient of determination

11. Biological traits and nutritional requirements of siberian sturgeon (Acipenser Baerii, brandt, 1869)

Cătălina Teodora CÎRMACIU (FLOREA)[1], Laurian Cristian Cojocariu[1], Cătălin Emilian NISTOR[1], Benone PĂSĂRIN[1]

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Abstract:
The Siberian sturgeon (*Acipenser baerii*) represents a species of major interest, recently introduced into Romanian aquaculture due to its adaptability to controlled rearing conditions and its high economic value. As a species with an ancient phylogeny, it exhibits distinct biological and physiological traits that significantly influence growth performance, metabolic processes, and feeding behavior. From a biological perspective, *A. baerii* is a benthic species characterized by relatively slow growth and late sexual maturation, as well as a high tolerance to variations in environmental conditions, making it suitable for intensive and semi-intensive aquaculture systems.From a physiological standpoint, the species demonstrates efficient oxygen utilization, while its metabolic activity is strongly influenced by temperature and water quality parameters. These factors directly affect feed intake, nutrient assimilation, and overall growth and development performance.From a nutritional perspective, *A. baerii* requires protein-rich diets and efficiently utilizes lipids as a primary energy source, but exhibits a limited capacity to metabolize carbohydrates, highlighting the importance of optimal feed formulation.This review article aims to synthesize current knowledge regarding the biological, physiological, and nutritional characteristics of the Siberian sturgeon, with the objective of identifying key factors influencing species growth, in order to support the development of efficient and sustainable aquaculture practices.
Keywords: Siberian Sturgeon, aquaculture, physiology, nutrition

12. Sea buckthorn by-products – valuable feed ingredients for poultry nutrition

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Abstract:
Sea buckthorn, a bioactive and nutritional plant, rich in fat soluble vitamins (A, K, E), water soluble vitamins (C, B1, B2, folic acid), beneficial fatty acids, flavonoids, phenols, terpenes, tannins, organic acids, and amino acids, is cultivated especially for its juice obtained from fruits which have demonstrated beneficial properties for human health. Sea buckthorn meal is the principal by-product and can be successfully incorporated into poultry diets, as demonstrated by numerous in vivo studies on poultry. This review synthesizes studies investigating the effects of

sea buckthorn components, by-products, and extracts in poultry, with particular emphasis on production performance (body weight, carcass traits, egg production, and egg quality), intestinal health, hypocholesterolemic effects, and improvements in egg yolk and meat color. Other beneficial effects regarding meat quality is n3-polyunsaturated fatty acids enrichment and delayed lipid oxidation. In conclusion, the available evidence indicates that sea buckthorn and its by-products can be considered functional ingredients with real benefits on the health of birds and the quality of the products obtained. They can be included in sustainable poultry production systems, oriented towards the valorization of natural resources.

Keywords: poultry health, egg, meat, bioactive compounds.

13. The Effect of Replacement of Soybean Meal with Chickpea (*Cicer arietinum* L.) on Pig Meat Quality and Fatty Acid Profile

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Abstract:
This study aimed to assess the effect of including chickpea (CKP; *Cicer arietinum* L.) into finishing pigs' diet on growth performance, meat quality and fatty acids profile (FAs). A total of 54 male crossbred pigs ([♀F1 Large White x Landrace] x ♂ Duroc) with an initial average body weight of 60.10±3.25 were divided into 3 dietary groups of 18 pigs each. The control group (CON) was fed a standardized SBM-based complete feed. In the experimental groups the SBM was replaced with increasing levels of CKP (100 and 200 g/kg; CKP10, and CKP20 groups). All diets were formulated to be iso-nitrogenous and iso-caloric with similar content of total lysine and sulphur amino acids, calcium, and phosphorus. After 49 days of fattening, all pigs were slaughtered. *Longissimus dorsi* (LD) muscle was sampled for analyses of the physico-chemical properties and FAs profile. No changes were found in growth performance (BW, ADG, ADFI, FCR), and carcass traits by including CKP into pigs' diets. Similarly, CKP diets did not affect the pigs' blood biochemical constituents and meat quality traits, except for protein content, which was significantly higher ($p<0.0001$), while fat and meat pH was significantly decreased ($p<0.0001$), suggesting improved meat quality. In addition, beneficial decrease in the values of some textural attributes of LD (chewiness, and resilience) in CKP groups was registered. Finally, the inclusion of CKP into the diet of pigs ensured a higher content ($p=0.032$) of n-3 PUFAs in the meat, especially, α-linolenic acid ($p=0.043$), docosapentaenoic acid ($p=0.047$), and docosahexaenoic acid ($p=0.044$), which allowed for an increase in the hypo-/hypercholesterolemic ratio ($p=0.042$), and a reduction in the n-6/n-3 PUFAs ratio ($p=0.039$), compared to the CON. In conclusion, CKP could be used as a replacement of SBM in the diets of finishing pigs with significant improvement of meat FAs profile and some technological properties, and maintained production performance.

Keywords: pigs; chickpea; performance; meat quality; fatty acid

14. Nutritional value of some drought-resistant plants with potential for use in animals nutrition

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Abstract:
As a result of climate changes, drought has become a repeatable phenomenon that creates major problems in the management of crop production systems, with direct effects on the livestock sector and implicitly on food security. In this context, the aim of this study was to evaluate the chemical composition and the nutritional value of some new drought-tolerant hybrids/ varieties of sorghum (*Sorghum bicolor L. Moench*) and cowpea (*Vigna unguiculata* [L] Walp) in order to establish their potential for use in the nutrition of monogastric and ruminant animals. Following the Weende analysis and the calculated nutritional value (PDI system), sorghum grains were characterized by a high crude protein content (10.93-12.50%), an energy value comparable to that of corn (3307-3320 ME kcal/kg) and a nutritional value of 99.81-113.89 g PDI/kg SU, 1.35 UNL and 1.42 UNC. Cowpea varieties also highlighted a high content of crude protein (28.8-30.4 %), fats (8.3-13.1 %), lower cellulose (5.0-5.8 %), an energy value comparable to that of other legumes (12.7-12.9 Mj/kg SU) and a nutritional value of 201.57-212.53 g PDI/kg SU, 1.44 UNL and 1.49 UNC. ACKNOWLEDGMENTS: The present study received financial support through Romanian Ministry of Education and Research (Project PN23-20.04.01).
Keywords: climate changes; drought; resistant plants; nutrition

15. A Comprehensive Review of Reptile Meat as an Alternative Protein Source: Nutritional Composition, Safety Concerns, Environmental Impact and Welfare Issues

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Abstract:
This review investigates the feasibility of reptile meat as an alternative protein source in the context of rising global protein demand and the need for sustainable food systems. It synthesizes current knowledge on edible reptile species (crocodiles, turtles, snakes, lizards and iguanas), their farming and geographic distribution and the key nutritional, safety, environmental and welfare aspects associated with their use for human consumption. Available

data indicates that reptile meat, particularly from crocodiles, snakes and some turtles, is characterized by high protein content, favourable fatty acid profiles (including essential n-3 and n-6 polyunsaturated fatty acids) and appreciable levels of essential amino acids and minerals, making it nutritionally comparable or superior to conventional livestock meats. However, important concerns persist regarding microbiological and chemical hazards, parasites, traceability and the role of reptile harvesting and farming in overexploitation, biodiversity loss and animal welfare challenges. This review highlights substantial regional differences in cultural acceptance and regulatory oversight and identifies major gaps in nutritional composition data, risk assessments and welfare guidelines for reptile farming and reptile meat. Overall, reptile meat may contribute to protein diversification, but its broader commercialization should be contingent on robust food safety management, conservation-compatible sourcing and species-specific welfare standards.

Keywords: environment, food safety, nutritional composition, reptile farming, reptile meat, welfare.

16. Guppy fish (*Poecilia reticulata*) and its use in scientific research- a short narrative review

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Abstract:
For many years, the Guppy fish (*Poecilia reticulata)* has been a new model organism in the family of laboratory animals used especially in the field of behavioral ecology and evolutionary biology. This short narrative review is trying to summarizes some of the guppy fish uses, from its early discovery and its use as an aquarium pet fish to modern specialized use as a laboratory animal in various applications.
This review-type study highlights important advances in our knowledge of life-history evolution under diverse pressure from predators and partner selection, particularly the complex interaction between the use of males as ornamental fish and the use of females for their reproductive capabilities. The paper also discusses the specie's significance in genomic and ecotoxicology studies, where its short period of time between new generations and environmental sensitivity, can offer precious information for tracking aquatic health status. This overview shows the guppy fish continued status as a flexible tool for answering basic biological issues by combining these several research streams.

Keywords: *Poecilia reticulata*, model organism, laboratory animals, ecotoxicology, aquarium fish

17. Assessment of Healthcare Services at the Caracal Municipal Hospital during the COVID-19 Pandemic

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Abstract:
The COVID-19 pandemic exerted substantial pressure on healthcare systems and significantly altered both access to and the organization of medical services. In this context, the present study assesses the activity of the Caracal Municipal Hospital in 2021, when the institution functioned as a designated support hospital for patients diagnosed with SARS-CoV-2 infection. The analysis is based on a retrospective examination of 4,404 hospital admissions. The findings reveal a predominance of female patients, an ageing age structure, and a high proportion of emergency admissions. Furthermore, a clear seasonal pattern in both admissions and discharges was identified, with peak values recorded during the summer months, particularly in August. Respiratory pathology represented the most frequently encountered condition, while a considerable share of patients presented a confirmed secondary diagnosis of COVID-19. At discharge, favourable clinical outcomes were predominant; however, hospital mortality remained notable, with higher rates observed among male patients.

Keywords: patients; diseases; health system; admission; discharge; diagnosis.

18. Measurement Methods for Assessing Behavioral Adaptation of Laying Hens to Thermal Stress

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Abstract
This review summarizes the various methods used to evaluate poultry behaviour under thermal stress, highlighting their importance for improving animal welfare, production performance, product quality, and environmental management. An extensive literature search was carried out on laying hens, thermal stress, and welfare-related aspects, emphasizing behavioural indicators, physiological responses, production traits, and management factors associated with adaptation to severe thermal conditions. Several observational methods were evaluated, including naturalistic observation, photographic documentation, continuous monitoring, time sampling, and focal animal studies. Infrared thermography was pointing out for its non-invasive technique to monitor body temperature. It is

mandatory to consider the detailed observation of hens' behaviour as key to early stress identification to enable effective strategies to minimize the economic impact for farmers. Despite their high costs and technological challenges, modern technologies for monitoring, recording, and assessing poultry behaviors are essential for an efficient farm management, as they contribute to the prevention of production losses and facilitate timely interventions by farmers.

Keywords: laying hens, production performances, thermal stress, welfare

19. Dynamics of Nitrogen Compounds and Water Quality Assessment in the Brateş Fish Farm Ponds

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Abstract:
Water quality is an essential factor in the functioning of aquatic ecosystems and in aquaculture activities, directly influencing the health and productivity of fish stocks. The aim of this study was to evaluate the dynamics of nitrogen compounds and the main physicochemical parameters of water in the ponds of the Brateş fish farm, in order to characterize the ecological status of this aquatic system.
Water quality monitoring was carried out between April and September 2023–2024, with monthly samples taken from four monitoring stations (EC3A, EC3B, BI3 and BI4). The analyses included the determination of nitrate (NO_3^-), nitrite (NO_2^-), ammonium (NH_4^+) and ammonia (NH_3) concentrations, as well as certain physicochemical parameters of the water, such as dissolved oxygen, pH and oxidizable organic substances, using standardized spectrophotometric and volumetric methods. Statistical methods, including Pearson's correlation analysis and analysis of variance (ANOVA), were used to evaluate the relationships between the analysed parameters.
The results showed variations in nitrogen compounds depending on the monitoring period and sampling station. Nitrate concentrations ranged from 0.1 and 2.1 mg N/L, and nitrite concentrations varied between 0 and 0.231 mg N/L. Ammonium values ranged from 0.032 to 1.93 mg N/L, while dissolved oxygen concentrations varied between 4.05 and 10.38 mg/L.
Pearson´s correlation analysis revealed a moderate negative correlation between dissolved oxygen and ammonium concentration ($r = -0.63$), indicating intensified organic matter mineralization processes during periods with lower oxygen levels. The results obtained highlight the importance of monitoring physicochemical parameters and nitrogen compounds for assessing the ecological status of fish ecosystems and for the sustainable management of aquaculture systems.

Keywords: aquaculture; eutrophication; mineralization; monitoring; nitrification; nutrients

20. Antioxidant effect of apple pomace diet in intestinal lymph nodes of weaned piglets challenged with Escherichia coli endotoxin

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Abstract:
The valorization of agro-industrial by-products represents an important strategy for promoting circular economy and sustainable agri-food systems. Apple pomace, a major by-product of the fruit processing industry, is a rich source of dietary fiber and bioactive compounds, particularly polyphenols, with potential applications in animal nutrition. This study aimed to evaluate the effects of dietary apple pomace inclusion on oxidative stress in weaned piglets challenged with bacterial lipopolysaccharides (LPS). A total of 26 weaned piglets were assigned to four experimental groups: control, LPS-challenged, apple pomace and LPS + apple pomace. After 21 days, oxidative stress markers were assessed in intestinal lymph nodes, including antioxidant enzyme activities (catalase, glutathione peroxidase, superoxide dismutase), total antioxidant capacity (TAC) and biomarkers of lipid, protein, and DNA oxidation. LPS challenge significantly impaired antioxidant defense by decreasing enzyme activities and TAC, while increasing oxidative damage to lipids, proteins, and DNA. Dietary inclusion of apple pomace improved antioxidant enzyme activities and partially restored TAC. Moreover, it significantly reduced LPS-induced oxidative damage, as evidenced by decreased levels of protein carbonyls, TBARS, and 8-oxo-2′-deoxyguanosine. In conclusion, apple pomace inclusion in the diet mitigates oxidative stress and enhances antioxidant status in weaned piglets under inflammatory challenge. These findings support the potential use of apple pomace as a functional feed ingredient in animal nutrition.

Keywords: apple, piglets, pomace, waste

21. Food Quality Control for Sensitive Consumer Segments: Challenges and Approaches in Child Nutrition

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Abstract:
Ensuring adequate food quality for sensitive consumer groups, particularly children, is a critical challenge in contemporary food science and public health. Children represent vulnerable population due to their rapid physiological development, immature immune and metabolic systems, and heightened susceptibility to foodborne contaminants, nutritional imbalances, and adverse dietary exposures. This review examines the main challenges

associated with food quality control in pediatric nutrition, including microbiological hazards, chemical contaminants, allergen management, nutritional adequacy, and the regulatory frameworks governing food products intended for young consumers.This review shows that current monitoring systems present substantial limitations when applied to child-specific dietary patterns, including school meals, infant formula, and processed foods marketed to younger age groups, with fragmented regulatory harmonization across jurisdictions identified as the most critical systemic gap. Analysis of emerging technological approaches demonstrates that biosensor-based rapid detection systems and risk-based preventive control plans adapted for child-oriented food production show the greatest near-term potential for strengthening quality assurance. Furthermore, the integration of nutritional profiling with safety assessment proves essential, as quality in pediatric nutrition extends beyond hazard elimination to encompass the active promotion of optimal growth and cognitive development.The findings conclude that no single disciplinary approach is sufficient to address the complexity of food safety in this domain. A multidisciplinary, risk-informed framework bridging food technology, pediatric nutritional science, regulatory policy, and consumer education is necessary to strengthen food safety systems across the entire supply chain. Prioritizing child-specific risk thresholds and age-differentiated quality standards in both policy design and technological development represents the most impactful direction for future progress in this field.
Keywords: allergen detection, biosensors, foodborne pathogens, nutritional profiling, regulatory harmonization, vulnerable populations

22. Avoiding Inbreeding Through Molecular Biology: Implications for Modern Genetic Improvement

Dorel DRONCA[1], Ioan Peţ[1*], Gabi Dumitrescu[1], Lavinia Ştef[1], Marioara Neagu-Nicula[1], Liliana Ciochină Petculescu[1], Silvia Pătruică[1], Adela Marcu[1], Diana Marcu[1] ,Mihaela Ivancia[2], Marius Maftei[3], Mirela Ahmadi[1*]

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Abstract:
The need for efficient and sustainable livestock breeding programs has increased the importance of controlling inbreeding and maintaining genetic diversity. Molecular biology offers valuable tools to address these challenges by allowing a more accurate evaluation of genetic relationships between animals at the molecular/DNA level. This paperwork presents how molecular techniques, such as DNA markers and genomic selection, can be used to reduce inbreeding in livestock populations. The use of molecular data helps breeders make better mating decisions, avoid closely related individuals, and detect harmful genetic variants at an early stage. As a result, these approaches can improve animal health, productivity, and long-term population stability. However, there are also some limitations, including high costs, the need for specialized equipment and expertise, and challenges in integrating molecular data with traditional performance traits. Thus, molecular biology plays an important role in modern livestock breeding by helping to manage inbreeding more effectively. Despite its limitations, its careful and balanced use can support sustainable genetic improvement in livestock populations.
Keywords: inbreeding, genetic improvement, livestock.

23. Sustainable Strategies for the Conservation of the *Transylvanian Naked Neck* Chicken Breed

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Abstract:
The *Transylvanian Naked Neck* chicken breed is one of the most representative indigenous poultry populations in Romania, distinguished by a unique morphological trait – the absence of feathers on the neck. The breed is considered a genetic treasure of traditional Romanian poultry farming, with historical roots dating back several centuries and a particular value for the animal biodiversity of Eastern Europe. The exact origin of the breed is not fully clarified; however, most sources indicate that it was developed in the Transylvania region, especially in Mureș, Cluj, and Sibiu counties, within rural environments, through both natural and artificial selection from local chicken populations. The first documented references to naked neck chickens date back to the 19th century, in descriptions made by foreign specialists visiting Transylvania, who noted "unusual birds, with featherless necks, yet highly resilient." Currently, the *Transylvanian Naked Neck* chicken breed is **at risk of extinction**. Although there have been attempts at revitalization, the number of purebred individuals remains extremely low, with most found in small household farms or private collections. The lack of genetic diversity in industrial breeds can lead to increased vulnerability to diseases and climate change. Therefore, the conservation of indigenous breeds such as the *Transylvanian Naked Neck* is essential for maintaining biodiversity and ensuring food security. To prevent the extinction of this native breed, it is crucial to adopt a coherent, long-term strategy that includes scientific, economic, educational, and institutional measures. The preservation of this breed is not only a matter of biodiversity conservation but also an act of responsibility toward Romania's genetic and cultural heritage. This paper proposes sustainable strategies that can contribute to the effective conservation of this breed.
Keywords: *Transylvanian Naked Neck breed,* genetic improvement, livestock.

24. INFLUENCE OF NITROGEN APPLICATION ON THE YIELD AND QUALITY OF BARLEY AND TRITICALE FEED GRAINS

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Abstract:
Cereals are used in animal feed due to their high dry matter yield and low production costs. Bosnia and Herzegovina (B&H) has relatively low cereal yields compared to other countries in the region. Unfavourable environmental conditions are a contributing factor to these low yields. Nevertheless, farmers can enhance grain production by implementing various agronomic practices. One of the quickest ways to boost yields is to apply fertilisers. Therefore, this study aimed to investigate the impacts of different nitrogen doses on the yields and quality of barley and triticale in the central B&H environment. A field experiment was conducted at the Faculty of Agriculture and Food Science at Sarajevo, B&H. The treatments included two nitrogen doses (F1 and F2) and two cereal species (Barley and Triticale). The results demonstrated a significant influence of fertilisation and cereal species on both yield and quality. The barley yield ranged from 5.1 t ha^{-1} (F1) to 5.5 t ha^{-1} (F2), while the triticale yield varied from 5.0 t ha^{-1} (F1) to 5.5 t ha^{-1} (F2). Protein content was also notably affected by nitrogen application. Barley protein content ranged from 10.58% (F1) to 11.08% (F2). Triticale protein content ranged from 19.51% (F1) to 10.82% (F2). A strong positive correlation was observed between crude fibre and ash, while test weight showed a strong negative correlation with crude fibre content.
Keywords: nitrogen, fertiliser, yield, protein, fibre, ash

25. Food Waste to Gut Health: Microbiome-Driven Strategies for Sustainable Nutrition and Human Health

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Abstract:
Sustainable development in the food and health sectors requires innovative strategies that simultaneously address environmental challenges, food security, and human health. The human gut microbiome represents a critical interface between diet, metabolism, and disease, offering new opportunities for the development of sustainable nutritional interventions.

Recent advances in microbiome research demonstrate that dietary components derived from plant-based by-products and agro-industrial waste streams can serve as valuable sources of bioactive compounds with prebiotic, antimicrobial, and immunomodulatory properties. These resources, often discarded in conventional food systems, may be repurposed into functional ingredients capable of modulating the gut microbiota and supporting metabolic and immune health. Our research integrates microbiome science with circular bioeconomy principles, focusing on the valorization of agro-food by-products such as berry pomace, cereal by-products, and plant residues. Using molecular microbiology approaches, including quantitative PCR and microbiome profiling, we investigate how these substrates influence microbial community composition, intestinal barrier integrity, and inflammatory responses. In parallel, microbiome-based screening platforms are employed to identify beneficial microbial strains with probiotic potential and to evaluate their role in preventing metabolic disorders, food allergies, and cardiovascular diseases. These approaches contribute to the development of sustainable functional foods and personalized nutrition strategies that promote both environmental sustainability and human health. By bridging microbiome research, food innovation, and circular bioeconomy models, this work highlights the potential of microbiome-informed dietary interventions as a key component of sustainable development strategies. The integration of microbiome science into sustainable food systems may support healthier populations while reducing food waste and improving resource efficiency.

Keywords: biocircular economy, prebiotics, probiotics

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26. The influence of urbanization on the diurnal butterflies of Timisoara

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Abstract:
The global decline of insects, especially pollinators, is a major environmental problem, accelerated by urbanization and habitat fragmentation. The main purpose of this study is to assess the impact of urban expansion on the diurnal butterfly fauna in the urban and peri-urban areas of Timisoara. Based on a standardized field methodology for collecting quantitative data and identifying species, this research quantifies the effects of anthropogenic pressure on specific diversity by using lepidopters as bioindicators sensitive to environmental changes. The data obtained are statistically interpreted using ecological indices to compare the level of biodiversity in various anthropogenic habitats. A central objective is to test the hypothesis that specialized species with a narrow ecological niche are first affected by urban development compared to generalist species. The paper also looks at the ability of green spaces to function as essential shelters for pollinators. Finally, by comparing current data with historical inventories, the results will underpin a series of recommendations for local authorities for sustainable management of green spaces. Thus, the work contributes to the conservation of local biodiversity and to the improvement of the quality of life.
Keywords: anthropisation, Lepidoptera, biodiversity, conservation

27. Control of Ovarian Function in Dairy Cattle: The Role of Machine Learning in Reproductive Management

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Abstract:
Control of ovarian function in dairy cattle is a central component of reproductive management, directly influencing fertility, calving interval, and overall herd productivity. Conventional hormonal protocols, such as Ovsynch and its variants, have significantly improved the synchronization of estrus and ovulation; however, reproductive performance remains highly variable due to individual differences in metabolic status, physiological condition, and environmental influences. These limitations highlight the need for more precise and individualized management strategies. In recent years, machine learning has emerged as a promising approach for integrating large and heterogeneous datasets to support advanced reproductive decision-making. By combining information from activity monitoring, milk production, body condition, progesterone profiles, rumination behavior, and farm management records, machine learning models can enhance the detection of estrus, improve the estimation of ovulation timing, and predict pregnancy outcomes with greater accuracy. Furthermore, these tools enable early identification of cows at risk of postpartum anovulation or luteal dysfunction, facilitating timely and targeted hormonal interventions. A major advantage of machine learning lies in its ability to identify complex, non-linear relationships among biological and management variables that are difficult to capture using conventional statistical approaches. This capability supports the transition from standardized protocols toward precision reproductive management, where synchronization strategies and treatments can be adapted to individual animals. Such approaches have the potential to improve conception rates, reduce days open, and optimize the use of hormonal therapies. Despite its considerable potential, the practical implementation of machine learning in dairy reproduction remains constrained by challenges related to data quality, model interpretability, herd-to-herd variability, and the need for large-scale validation under commercial farm conditions. Overall, the integration of data-driven approaches with reproductive physiology offers a valuable pathway toward more efficient, individualized, and sustainable control of ovarian function in dairy cattle.

Key words: precision livestock farming, fertility, estrus detection, pregnancy prediction, herd management systems.

28. Impact of Follicular Aspiration on Follicular Dynamics and Ovarian Function in Dairy Cattle

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Abstract:
Follicular aspiration is a widely utilized technique in ovum pick-up (OPU) procedures for harvesting cumulus oocyte complexes (COCs) and plays a significant role in altering ovarian physiology in dairy cattle. Follicular development occurs in distinct waves, regulated by both endocrine and intra-ovarian mechanisms, which include follicle recruitment, selection, and dominance. When follicles, especially the dominant one, are removed through aspiration, this disrupts the natural sequence of events, leading to the emergence of a new follicular wave and changing the dynamics of follicle development. In this connection, this review aims to evaluate the effects of follicular aspiration on follicular dynamics and ovarian function in dairy cattle, particularly focusing on its impact on follicular wave patterns, oocyte competence, and reproductive performance. Evidence suggests that follicular aspiration can enhance follicular turnover by stimulating the recruitment of new follicles while preventing prolonged dominance of any single follicle. However, frequent aspiration may also lead to local ovarian trauma, affect vascularization, and potentially lower oocyte quality under certain conditions. Several factors influence the response to follicular aspiration, including the metabolic status of the dairy cattle, the stage of lactation, and intrinsic ovarian characteristics like antral follicle count. High-yielding dairy cattle may show altered responses due to endocrine imbalances related to negative energy balance, which can disrupt normal folliculogenesis. Furthermore, the frequency and technique used for aspiration significantly affect the overall outcomes. In conclusion, follicular aspiration is a valuable tool for manipulating ovarian function; however, its application requires careful consideration of physiological and management-related factors. A deeper understanding of its effects is mandatory for optimizing reproductive technologies and improving fertility parameters in dairy cattle.

Keywords: ovum pick-up, follicular wave emergence, oocyte recovery, dominant follicle.

29. Effects of Birth Type, Genotype and Nutritional Management on Growth Performance of Female Lambs

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Abstract:
The present study evaluated the growth dynamics of female lambs of the Tsigai breed (rusty variety) and triracial crossbreds (50% Suffolk × 37.5% German Blackface × 12.5% Tsigai) from birth to 8.5 months under controlled management conditions. A total of 124 female lambs were allocated into four groups according to breed and birth type: twin Tsigai (L1, n = 18), single Tsigai (L2, n = 62), twin crossbred (L3, n = 11), and single crossbred (L4, n = 33). Body weights were recorded at birth, at weaning, at 7 months, and at 8.5 months, and both total weight gain and average daily gain (ADG) were calculated.
During the first two periods (pre-weaning and post-weaning up to 7 months), all lambs were fed identical rations. In the final period (7–8.5 months), the twin Tsigai females received a modified concentrate diet containing yeast. Twin Tsigai females exhibited the lowest ADG during both the pre-weaning (187.51 g/day) and post-weaning periods (92.97 g/day), but the highest ADG in the final period (153.44 g/day).
These findings highlight the importance of implementing targeted nutritional strategies for lambs with lower initial growth potential, particularly in order to improve performance during later developmental stages.

Keywords: feed yeast, twin, feeding strategies, Tsigai, crossbred

30. Physico-chemical analysis of toxic compounds in Azaleas and Prunus laurocerasus

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Abstract:
This research addresses ornamental plants frequently used in landscaping, focusing on their toxic properties. Such plants may have hidden characteristics that are not widely known to those who own them. Therefore, understanding the compounds present in these plants is essential for maintaining a safe environment. The dual nature of Azaleas and Prunus laurocerasus, also known as English laurel, makes them subjects of current scientific interest.
This study aims to identify toxic components present in these two plant species and to establish an experimental protocol for detecting these compounds in samples, with possible applications in forensic investigations. Given their toxic nature, it is important to understand their chemical properties in detail. Phytochemical analysis was conducted using advanced spectroscopic techniques.
Knowledge of toxic properties is essential to properly manage and minimize or even neutralize harmful effects that may occur in humans or animals. The methodology focuses on identifying and characterizing chemical compounds using Fourier Transform Infrared Spectroscopy (FTIR) and Ultraviolet–Visible (UV–Vis) spectroscopy.
The study includes initial analyses of powdered plant material, validation of efficient extraction methods, and examination of resulting extracts. These data are valuable because they can be compared with results from unknown mixtures or biological samples in forensic contexts.
Previous research has identified various toxic compounds, such as alkaloids and glycosides, in Prunus laurocerasus and azaleas, although their characteristics are not fully understood. The importance of this study extends beyond academia, with relevance in horticulture, landscaping, public safety, and forensic science. Understanding these risks is a key step toward reducing their impact on human and animal health.
Keywords: Alkaloids, Extraction methods, Glycosides, Plant, Safety, Spectroscopy

31. The Influence of Stimulative Feeding of Nurse Bees on Royal Jelly Production

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Abstract:
The aim of the research was to evaluate the influence of stimulative feeding of nurse bees on increasing larval acceptance for rearing, queen cell dimensions (diameter, length, and the mass of the queen cell containing royal jelly and the larva), as well as the amount of royal jelly obtained from a single queen cell, per rearing cycle and in total over the course of three cycles. In the first cycle, each experimental colony received one frame containing 45 grafted larvae. In the second cycle, two frames containing 90 grafted larvae were provided, while in the third cycle, three

frames containing 135 grafted larvae were introduced. The nurse bees were fed daily with one liter of a mixture consisting of sugar syrup and the biostimulator MF-SIB-49, beginning from the moment the frames with grafted larvae were introduced and continuing for three consecutive days, until the day on which the frames were removed for royal jelly harvesting. This procedure was applied during the second and third cycles as well. Based on the evaluation performed, it was found that, in the absence of a maintenance nectar flow, feeding nurse bees with a mixture of sugar syrup and biostimulator stimulates royal jelly secretion required for the rearing of grafted larvae. This leads to an increase in the number of grafted larvae accepted for rearing, improves the developmental parameters of queen cells (length, diameter, and the mass of the queen cell together with royal jelly and larva), and increases the amount of royal jelly obtained from a single queen cell, both per cycle and in total across three cycles. The total amount of royal jelly obtained from one bee colony over the three cycles was 66.0 g, which was 32.0–45.4% higher than in the control group.

Keywords: beekeeping, biostimulator, queen cells, nutrition, colony.

32. Effect of dietary dried thyme leaves supplementation on performance of lactating goats

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Abstract:
Thyme (Thymus vulgaris L.) is considered a promising natural dietary supplement that can enhance animal health and overall productivity due to its antioxidant and antibacterial properties. This study aimed to evaluate the effect of dried thyme leaves on the lactation performance of Saanen/Florida goats (crossbreed) and the chemical composition of the milk. Sixteen multiparous lactating goats were divided into two groups (experimental and control) after 60 days of parturition, which consisted of 4 subgroups of 2 goats each and monitored during a critical lactation period. Apart from daily grazing, concentrate mixture was offered to animals of all groups (dry matter, DM: 0.894 kg/goat/day, crude protein: 448 g /kg DM, net energy for lactation: 14.7 MJ/kg DM), as well as alfalfa hay (1.05 kg DM/goat/day) and wheat straw (0.37 kg DM/goat/day) according to their nutritional needs. The other experimental animals were fed control ration plus 6 g thyme leaves/kg of concentrate mixture. The total duration of feeding experiment was 56 days and there were no differences in feed intake between the treatments. The analysis of the results showed that although the highest milk yields were observed with thyme leaves addition, there was no significant difference between the expiremental and the control groups (P=0.79). On the other hand, milk fat content from experimental groups tended to decrease (P < 0,001), while the solids-not-fat remained almost constant in all treatments throughout the feeding trial (P=0.015).

Keywords: Thymus vulgaris, feed ingredient, Saanen/Florida goats, milk yield, milk composition

33. Chemical Composition and Biological Activities of oregano (*Origanum vulgare*) Essential Oil

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Abstract:
Essential oils are increasingly investigated as phytogenic alternatives to conventional feed additives because they may simultaneously modulate microbial load, oxidative status, and intestinal health. In this study, oregano (Origanum vulgare) essential oil was chemically characterized and evaluated for its biological potential as a natural candidate for broiler nutrition. Gas chromatography–mass spectrometry revealed a carvacrol-dominant profile, with carvacrol (71.29%) as the major constituent, followed by o-cymol (5.84%), γ-terpinene (5.63%), β-caryophyllene (3.73%), β-linalool (3.16%), thymol (1.87%), eucalyptol (1.49%), and camphor (1.14%). Antimicrobial activity, assessed by broth microdilution against Escherichia coli, Salmonella Typhimurium, Listeria monocytogenes, and Clostridium perfringens, showed inhibitory activity at 7.5 µg/mL for all tested strains, indicating broad-spectrum antibacterial efficacy. Antioxidant evaluation by the DPPH assay demonstrated strong radical-scavenging capacity (78.17 ± 0.02% at 0.074 mg/mL). In contrast, anti-inflammatory screening based on erythrocyte membrane stabilization and inhibition of albumin denaturation suggested only limited protective activity under the tested conditions. In conclusion, oregano essential oil displayed a favorable functional profile driven mainly by its antimicrobial and antioxidant activities, supporting further investigation as a natural feed additive for poultry gut health and performance optimization.
Keywords: Phytobiotics; antimicrobial activity; Carvacrol; enteric pathogens; antioxidant capacity.

34. Analysis of the Recent Evolution of the Global Coffee Market: Determinants of Price Increases and Perspectives on Sector Sustainability (2023–2025) – Review

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Abstract:
The present review examines the recent evolution of the global coffee market during the 2023–2025 period, with a particular focus on the factors that have driven the significant increase in international prices and on the effects of

this dynamic on the sustainability of the sector. Based on the relevant literature and the FAO documents consulted, the analysis highlights that the rise in international quotations was closely associated with supply disruptions, mainly caused by adverse climatic conditions in major producing countries such as Brazil, Vietnam, Indonesia, and other key coffee-producing states, compounded by logistical difficulties and additional trade pressures. In this context, price volatility cannot be explained solely by the relationship between supply and demand, but must also be examined in connection with the structural vulnerabilities of the global value chain, the high exposure of coffee crops to climate-related risks, and the essential role of smallholder producers, who make a significant contribution to global production. At the same time, the analysis shows that the current challenges facing the coffee sector go beyond the strictly economic dimension, encompassing relevant issues such as traceability, supply chain transparency, increasingly stringent sustainability requirements, and the social and environmental costs associated with production. Looking ahead, the reduction of areas suitable for coffee cultivation under the impact of climate change may intensify market instability and lead to a reconfiguration of the relationships among production, trade, and consumption. In conclusion, this review supports the need for integrated interventions aimed at strengthening climate resilience, fostering innovation, enhancing traceability, and ensuring fair support for smallholder farmers, with a view to developing a more stable and sustainable coffee sector.

Keywords: global coffee market, price dynamics, volatility, climate change, sustainability sector, traceability, global value chain

35. Beyond the Rhizome: Unlocking Ginger's Potential in Poultry Nutrition – a short narrative review

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Abstract:
Phytogenic feed additives have become essential resources for maintaining bird health and productivity as the global poultry industry advances toward antibiotic-free production. Gingerols, shogaols, and zingerone are only a few of the bioactive substances which make ginger (*Zingiber officinale*) distinct among other phytobiotics. The diverse potential of ginger as a useful phytobiotic in poultry nutrition is assessed in this review. According to scientific research, adding ginger in poultry diet greatly improves growth performance by increasing the release of digestive enzymes like lipase and protease, which improves feed conversion ratios and nutrient utilization.

By raising villus height and modifying the gut microbiota, ginger has significant antibacterial and anti-inflammatory properties at the enteric level which aid intestinal health. It decreases pathogenic loads of Salmonella and Escherichia coli while maintaining an equilibrium that favors helpful Lactobacillus species. Also, the birds' general health and immunological resistance are strengthened by the potent antioxidant capacity of gingerols, which decreases oxidative stress and contributes directly to improved animal welfare standards. Furthermore, this review highlights the widespread impact of ginger on the quality of the final product; adding it to feed increased shelf life and improves consumer sensory qualities by lowering lipid peroxidation in meat and eggs. When taken as a whole, ginger offers a sustainable and effective nutritional approach to maximize poultry production cycles and supply the market with premium, "clean-label" animal proteins.

Keywords: phytobiotics, *Zingiber officinale*, broiler, gut health, microbiota, welfare

36. First documented feeding interaction between the agricultural pest insect *Oulema melanopus* and the invasive weed species *Eriochloa villosa*

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Abstract:
Oulema melanopus is a widespread agricultural pest insect that causes significant yield losses in cereal crops because of leaf damage during its larval stages. Infestations are unpredictable and sporadic, and research shows it can reliably feed on Poaceae family weeds, as well. In this paper we describe the first observed feeding interaction between O. melanopus and Eriochloa villosa, an East Asian weed that became a relevant invasive species in North America and Europe, especially due to its competitive nature and resulting yield losses within crops such as maize and soybeans. In June 2024, O. melanopus adults were observed to intensively feed on E. villosa, leaving typical elongated slits on most plant individuals grown in untreated experimental pots. We describe the resulting injuries in detail and discuss the relevance of the timing, as this occurred before surrounding cereal fields were harvested, and thus these individuals were most likely not forcefully displaced from their main hosts. We also discuss the importance of reporting interspecific interactions officially through scientific outlets due to the potential aid in creating better management strategies and prevention programs for invasive species and problematic pests, while also providing relevant ecological insights on their adaptability and interaction dynamics for further studies.

Keywords: Poaceae, Host plant preference, Leaf damage, Interspecific interactions, Dispersal, Ecological adaptability.

37. Reproductive Performance in Sheep under Organic and Conventional Farming Systems

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Abstract:
Reproductive performance in sheep represents a key element in the efficiency of production systems, being influenced by biological, nutritional, and management factors. This paper analyzes the essential aspects of reproductive performance in sheep under organic and conventional farming systems, with emphasis on fertility, fecundity, conception rate, prolificacy, and the seasonality of reproduction. The specific management and production characteristics of the two systems are examined, as well as the influence of nutrition and animal welfare on the main reproductive indicators. In addition, the comparative analysis of the two systems integrates the constraints and challenges specific to sheep farming under organic conditions, together with their practical implications. Finally, the advantages and limitations of both farming systems are highlighted, underlining the key factors that influence reproductive efficiency and the importance of proper management in improving farm performance.
Keywords: prolificacy, seasonality, nutrition, animal welfare, housing conditions

38. Short-Term CIDR Synchronization and Reproductive Performance in Ewes

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Abstract:
This study evaluated the effect of a short-term estrus synchronization protocol using controlled internal drug release (CIDR) combined with PMSG on fertility and reproductive performance of ewes following natural mating. The experiment was conducted in a semi-intensive commercial flock of 2,000 crossbred ewes (Lacaune, Assaf, and Lesvos breeds) in Thessaly, Greece. A total of 100 clinically healthy, multiparous four-year-old ewes were randomly allocated into a treatment group (CIDR + PMSG) and a control group (natural estrus), with 50 animals per group. The treatment group underwent a 7-day synchronization protocol, while the control group was managed under natural estrus conditions. All ewes were exposed to the same rams and monitored for estrus expression and pregnancy diagnosis using ultrasonography. Both groups achieved 100% pregnancy and lambing rates, indicating high reproductive efficiency under the applied management conditions. However, the treatment group exhibited improved reproductive performance, with a higher average litter size (2.64 ± 0.49 vs. 2.42 ± 0.50), a greater total number of lambs (129 vs. 119), and an earlier completion of lambing (165 vs. 168 days). Additionally, the lambing period was slightly shorter in the treated group (22 vs. 24 days), indicating improved synchronization. No dystocia or other lambing-related complications were recorded, confirming the safety and practical applicability of the protocol. In conclusion, the short-term CIDR plus PMSG protocol represents an effective and safe reproductive management strategy for enhancing prolificacy, improving flock productivity, and facilitating more efficient lambing management in commercial sheep production systems.
Keywords: oestrus synchronization, PMSG, litter size, reproductive performance, sheep production, lambing management

39. Study on the Use of Different Types of Artificial Honeycombs in Bee Exploitation

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Abstract:
The purpose of the research is to study the use and evaluation of the growth of different types of artificial honeycombs. Following the assessment of the intensity of acceptance and cell formation by bees of different types of artificial honeycombs: coloured, simple, ecological and traditional ones, it was revealed that newly built honeycombs have a light-yellow colour and worker bees give priority to the construction of cells from wax capping and to the simple ones compared to the traditional ones. Worker bees gave priority to the coloured artificial honeycomb, and it was accepted for cell growth, keeping the red colour compared to the simple and traditional honeycombs. Artificial combs made of wax capping (ecological) are the most accepted for cell formation by bees and honeycomb construction.

Keywords: bees, artificial, capping, traditional, coloured.

40. Analysis of the Success Factors of a Food Startup

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Abstract:
The food industry represents one of the most dynamic and competitive economic sectors, characterized by constant evolution driven by changes in consumer preferences, technological innovations, and global trends related to healthy lifestyles. In this context, food start-ups have become important players, contributing to the diversification of offerings and the introduction of innovative concepts tailored to the demands of the modern market. These entrepreneurial initiatives stand out through their flexibility, creativity, and ability to respond quickly to emerging trends such as sustainable nutrition, organic products, and digitalized delivery services.
The importance of analyzing the success factors of a food start-up stems from the high failure rate specific to this sector, mainly caused by intense competition, high operational costs, and strict regulations regarding food safety. Understanding the elements that contribute to the performance of these businesses is essential for both entrepreneurs and researchers, providing a solid foundation for developing effective and sustainable strategies.

The purpose of this paper is to identify and analyze the main factors that influence the success of a food start-up, taking into account both the internal dimension of the organization (product, team, business model) and external factors (market, consumers, legislative environment). The methodology used is based on the analysis of specialized literature and the interpretation of relevant practical examples, in order to highlight best practices in the field. Thus, the paper aims to provide an integrated perspective on the mechanisms underlying the development and consolidation of a competitive food start-up in a continuously changing market.

Keywords: food startup, success factors, innovation, competitive market, consumer behavior

41. THE ROLE OF THE BUSINESS PLAN IN THE DEVELOPMENT OF FOOD ENTERPRISES

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Abstract:
The food industry represents a strategic sector of the economy, characterized by a high level of dynamism and continuous adaptation to changes in the economic, social, and technological environment. The evolution of consumer preferences, the increasing orientation toward healthy and sustainable products, as well as the intensification of competition, require food enterprises to adopt effective strategies for development and market consolidation. In this context, entrepreneurship plays an essential role, contributing to the diversification of offerings and the stimulation of innovation within the sector.
A fundamental element in the initiation and development of a business is the business plan, considered a complex managerial tool that integrates the organization's objectives, action strategies, and the resources necessary to achieve them. In the case of food industry enterprises, the importance of the business plan is even greater, given the specific characteristics of this sector, marked by strict food safety regulations, high operational costs, and a high level of risk.
This paper aims to analyze the role of the business plan in the development of food enterprises, highlighting its contribution to strategic planning, the attraction of funding sources, and the efficient management of risks. It also considers the main functions of the business plan in the decision-making process and in monitoring organizational performance.
The research methodology is based on the analysis of specialized literature in the fields of entrepreneurship and management, as well as on the interpretation of relevant theoretical concepts. Through this approach, the paper seeks to provide a coherent and well-founded perspective on the importance of the business plan as an essential tool in the sustainable and competitive development of enterprises in the food industry.

Key words: business plan, food industry, entrepreneurship, strategic planning, risk management

42. Animal welfare and the safety of those who care for animals

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Abstract:
The duty to ensure animal welfare should go hand in hand with responsibility for the health and lives of those who care for animals. For the farmer, safety and the quality of work are just as important and valuable as the profitability of production. Whilst ensuring high standards of animal husbandry, in accordance with animal welfare legislation, is an effective way of reducing the risk of accidents when handling animals, human safety is the overriding priority and, in extreme situations, justifies the use of force against an animal. People who come into contact with animals or work with them may be involved in accidents caused by animals (crushing, biting, kicking, trampling), which can be life-threatening and pose a serious risk to human health. The safety and quality of a farmer's (breeder's) work are fundamental to their health and life, as the farming profession in Poland is among the most dangerous and deadly occupations. Fatal accidents involving animals account for a significant proportion of accidents: 2013 – 5, 2014 – 4, 2015 – 2, 2016 – 10, 2017 – 3, 2018 – 4, 2019 – 2, 2020 – 4, 2021 – 4, 2022 – 2, 2023 – 3, 2004 – 2, 2025 – 5. The main causes of accidents involving animals are: improper handling, poor condition of buildings and premises, animals' unruliness and aggression, being taken by surprise by an unexpected event, failure to use restraints, cattle prods, etc. when handling animals, as well as being struck, crushed or bitten by animals. Attention should also be paid to the risks associated with zoonoses, i.e. animal-borne diseases dangerous to humans, such as prion diseases, foot-and-mouth disease, rabies and Lyme disease. The predominant conditions in recent years have been infectious and parasitic diseases (218 in 2025), of which Lyme disease was the most frequently diagnosed. Slightly fewer reports concerned respiratory diseases (19 in 2025), neuromuscular disorders (14 cases) and skin diseases (1 case). These figures point to a growing need to monitor farmers' health and to introduce more effective preventive measures, including regular health checks. The prevalence of depression among farmers – 32.11% – is a cause for concern. The main sources of stress on a farm are: 'economic uncertainty' – 64.6% of responses – and 'numerous duties and tasks to be carried out on the farm' – 50.5% of responses.

Keywords: Polish farmers, accidents, occupational diseases

Acknowledgments: The study was produced as part of the SafeHabitus project - Strengthening Farm Health and Safety Knowledge and Innovation System https://www.safehabitus.eu.

43. Morpho-productive Performance of Lacaune Sheep under Semi-Intensive Conditions in NE Romania

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Abstract:
The Lacaune sheep is a specialized dairy breed increasingly used in Romania; however, information regarding its productive performance and functional adaptation under local rearing conditions remains limited. The aim of this study was to evaluate milk production and key morphometric traits in a Lacaune sheep population raised under semi-intensive conditions and to assess their relevance as indicators of functional adaptation.
The study was conducted on 392 animals, including adult ewes, rams, and yearling ewes. Milk yield was recorded within the Official Performance and Recording Scheme over a 120-day control period. Body development was characterized using body weight (BW) and linear morphometric traits, including withers height (WH), chest width (CW), rump width (RW), trunk length (TL), and chest girth (CG), collected using standard zootechnical methods. Descriptive statistics were complemented by the analysis of variability and the relationships between morphometric traits and milk production using Real Statistics Resource Pack software (Release 7.6).
The average milk yield was 120.86 ± 8.59 kg during the control period. In adult ewes, the mean values recorded were 69.41 kg for BW, 67.48 cm for WH, 26.18 cm for CW, 28.21 cm for RW, 71.68 cm for TL, and 101.98 cm for CG. Rams exhibited higher values (e.g., WH = 79.8 cm; CG = 119.7 cm), while yearling ewes showed lower measurements (e.g., WH = 65.58 cm; CG = 96.99 cm), reflecting age-related development. Coefficients of variation indicated a high degree of homogeneity across traits, particularly in rams, while slightly higher variability in ewes was associated with physiological differences.
The results indicate that Lacaune sheep maintain stable productive and morphometric performance under semi-intensive Romanian conditions. The consistency of traits, combined with satisfactory milk yield, suggests a good level of functional adaptation. The study supports the integration of morphometric and productive indicators for evaluating biological performance and adaptation capacity in dairy sheep populations.

Keywords: morphometric traits; dairy sheep; adaptability, environement.

44. Longan (*Dimocarpus longan*) concrete: bioactive potential against bacterial strains and stored product insects

Miroslava KAČÁNIOVÁ [1], Minhang QIAO, Mária BABOŠOVÁ, Jana IVANIČ PORHAJAŠOVÁ, Ladislav BAKAY, Ján KOLLÁR

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Abstract:
The paper should be submitted in Word.docx format. The paper should be prepared on A4 paper (210 x 297 mm) and it must contain an abstract between 150-300 words. Longan (*Dimocarpus longan* Lour.) is a tropical fruit native to southern China and Southeast Asia, traditionally used not only as a food source but also in traditional Chinese medicine. Longan concrete is a thick yellow-brown to dark brown paste with a characteristic aroma, obtained by extraction of plant material using organic solvents. It contains a wide range of bioactive compounds responsible for its antioxidant, antimicrobial, and insecticidal properties. The aim of this study was to evaluate the antimicrobial activity of longan concrete against selected bacterial strains and its insecticidal activity against two beetle species infesting stored products. Antimicrobial activity was determined using the disc diffusion method and by assessing the minimum inhibitory concentration (MIC_{50} and MIC_{90}) against six bacterial strains: *Bacillus cereus* CCM 2010, *Enterobacter aerogenes* CCM 2531, *Klebsiella pneumoniae* CCM 2318, *Listeria innocua* CCM 4030, *Staphylococcus epidermis* CCM 4418, and *Citrobacter koseri* CCM 2535. An antibiotic disc (ABT) was used as a positive control. Insecticidal activity was evaluated against *Callosobruchus maculatus* and *Megabruchidius dorsalis* at concentrations ranging from 3.125 % to 100 %. Disc diffusion results showed inhibition zones ranging from 7.67 to 13.67 mm, with the strongest activity observed against *S. epidermis* (13.67 mm) and *L. innocua* (12.67 mm). MIC_{50} values ranged from 0.188 mg/mL (*S. epidermis*) to 2.472 mg/mL (*C. koseri*), while MIC_{90} values ranged from 0.468 mg/mL (*S. epidermis*) to 3.461 mg/mL (*C. koseri*). At the highest concentration (100 %), insecticidal activity reached 95.67 % mortality for *C. maculatus* and 88.67 % for *M. dorsalis*. Longan concrete exhibited notable antimicrobial activity, particularly against Gram-positive bacteria, as well as significant insecticidal effects against both tested beetle species. These findings suggest its potential as a natural alternative for the protection of stored food commodities.

Keywords: *Dimocarpus longan*; antimicrobial activity; insecticidal activity; stored food protection; natural preservative

45. Jasmine (*Jasminum sambac*) absolute: a fragrant shield against bacterial pathogens and stored product beetles

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Abstract:
Jasmine (*Jasminum sambac* (L.) Aiton) is a flowering plant of the family Oleaceae, widely cultivated in China, India, and Southeast Asia for its intensely fragrant blossoms. Jasmine absolute is a yellow-green to red-brown liquid obtained by solvent extraction, rich in benzyl acetate, linalyl acetate, benzyl benzoate, jasmine lactone, methyl jasmonate, and linalool, among other bioactive constituents. Due to its complex chemical composition, jasmine absolute has attracted increasing interest as a potential source of natural antimicrobial and insecticidal agents. The aim of this study was to evaluate the antimicrobial activity of jasmine absolute against selected bacterial strains and its insecticidal activity against two beetle species infesting stored products. Antimicrobial activity was determined using the disc diffusion method and by assessing the minimum inhibitory concentration (MIC_{50} and MIC_{90}) against six bacterial strains: *Bacillus cereus* CCM 2010, *Enterobacter aerogenes* CCM 2531, *Klebsiella pneumoniae* CCM 2318, *Listeria innocua* CCM 4030, *Staphylococcus epidermis* CCM 4418, and *Citrobacter koseri* CCM 2535. An antibiotic disc (ABT) was used as a positive control. Insecticidal activity was evaluated against *Callosobruchus maculatus* and *Megabruchidius dorsalis* at concentrations ranging from 3.125% to 100%. Disc diffusion results revealed inhibition zones ranging from 9.67 to 14.67 mm, with the strongest activity observed against *L. innocua* (14.67 mm), *B. cereus* (14.33 mm), and *S. epidermis* (14.33 mm). MIC_{50} values ranged from 0.215 mg/mL (*B. cereus*) to 2.724 mg/mL (*K. pneumoniae*), while MIC_{90} values ranged from 0.518 mg/mL (*L. innocua*) to 3.576 mg/mL (*K. pneumoniae*). At the highest concentration (100 %), insecticidal activity reached 97.67 % mortality for *C. maculatus* and 90.00 % for *M. dorsalis*. Jasmine absolute demonstrated notable antimicrobial activity, particularly against Gram-positive bacteria, as well as strong insecticidal effects against both tested beetle species, supporting its potential as a natural agent for the protection of stored food commodities.

Keywords: jasmine absolute; phytochemicals; antibacterial effect; stored-product pests; bioinsecticide; natural compounds

46. Green plum (*Prunus mume*) concrete as a natural antimicrobial and insecticidal agent

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Abstract:
Green plum (*Prunus mume* Siebold & Zucc.) is a fruit-bearing tree of the family Rosaceae, deeply rooted in East Asian culinary and medicinal traditions, particularly in China, Japan, and Korea. Green plum concrete is a thick yellow-brown to dark brown paste with a characteristic aroma, obtained by solvent extraction of the fruit. Its complex composition of bioactive compounds has attracted increasing scientific interest for natural antimicrobial and insecticidal applications. The aim of this study was to evaluate the antimicrobial activity of green plum concrete against selected bacterial strains and its insecticidal activity against two beetle species infesting stored products. Antimicrobial activity was determined using the disc diffusion method and by assessing the minimum inhibitory concentration (MIC_{50} and MIC_{90}) against six bacterial strains: *Bacillus cereus* CCM 2010, *Enterobacter aerogenes* CCM 2531, *Klebsiella pneumoniae* CCM 2318, *Listeria innocua* CCM 4030, *Staphylococcus epidermis* CCM 4418, and *Citrobacter koseri* CCM 2535. An antibiotic disc (ABT) was used as a positive control. Insecticidal activity was evaluated against *Callosobruchus maculatus* and *Megabruchidius dorsalis* at concentrations ranging from 3.125 % to 100 %. Disc diffusion results showed inhibition zones ranging from 7.67 to 13.33 mm, with the strongest activity observed against *L. innocua* (13.33 mm) and *S. epidermis* (12.33 mm). MIC_{50} values ranged from 1.435 mg/mL (*S. epidermis*) to 4.661 mg/mL (*C. koseri*), while MIC_{90} values ranged from 2.382 mg/mL (*S. epidermis*) to 5.862 mg/mL (*C. koseri*). At the highest concentration (100 %), insecticidal activity reached 96.67 % mortality for *C. maculatus* and 92.00 % for *M. dorsalis*. Green plum concrete showed moderate antimicrobial activity, with the most pronounced effects against Gram-positive bacteria, alongside strong insecticidal efficacy against both tested beetle species. These findings highlight its potential as a plant-derived bioactive extract for food protection applications.

Keywords: *Prunus mume*; plant extract; antibacterial efficacy; stored-grain insects; botanical insecticide; food preservation

47. Tamarind (*Tamarindus indica*) concrete as a natural antimicrobial and insecticidal agent

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Abstract:
Tamarind (*Tamarindus indica* L.) is a multipurpose tropical tree of the family Fabaceae, native to tropical Africa and widely naturalized across Asia and Latin America. Tamarind concrete is a yellow-brown to tan paste with a distinctive aroma, obtained by solvent extraction and characterized by the presence of furfural, 5-hydroxymethylfurfural, ethyl oleate, ethyl palmitate, palmitic acid, and elaidic acid. These constituents contribute to its bioactive properties, which have attracted increasing attention for natural antimicrobial and insecticidal applications. The aim of this study was to evaluate the antimicrobial activity of tamarind concrete against selected bacterial strains and its insecticidal activity against two beetle species infesting stored products.
Antimicrobial activity was determined using the disc diffusion method and by assessing the minimum inhibitory concentration (MIC_{50} and MIC_{90}) against six bacterial strains: *Bacillus cereus* CCM 2010, *Enterobacter aerogenes* CCM 2531, *Klebsiella pneumoniae* CCM 2318, *Listeria innocua* CCM 4030, *Staphylococcus epidermis* CCM 4418, and *Citrobacter koseri* CCM 2535. An antibiotic disc (ABT) was used as a positive control. Insecticidal activity was evaluated against *Callosobruchus maculatus* and *Megabruchidius dorsalis* at concentrations ranging from 3.125 % to 100 %. Disc diffusion results revealed inhibition zones ranging from 9.33 to 14.33 mm, with the strongest activity observed against *B. cereus* (14.33 mm) and *L. innocua* (13.67 mm). MIC_{50} values ranged from 0.770 mg/mL (*S. epidermis*) to 2.625 mg/mL (*C. koseri*), while MIC_{90} values ranged from 0.779 mg/mL (*L. innocua*) to 3.757 mg/mL (*E. aerogenes*). At the highest concentration (100 %), insecticidal activity reached 92.67 % mortality for *C. maculatus* and 88.67 % for *M. dorsalis*. Tamarind concrete demonstrated noteworthy antimicrobial activity, particularly against Gram-positive bacteria, along with considerable insecticidal effects against both tested beetle species. These findings underscore its potential as a plant-derived bioactive material for food protection applications.

Keywords: *Tamarindus indica*; plant-derived compounds; antibacterial properties; grain pests; eco-friendly insecticide; post-harvest protection

48. The Worryng Evolution of Highly Pathogenic Avian Influenza in Recent Years in New Geographical Regions of The World and in New Species

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Abstract:
Highly pathogenic avian influenza H5N1 dominated the global epidemiological picture between 2004-2006. The carriers of the flu are migratory birds, the virus being located in the intestines of birds. The H5N1 subtype is extremely contagious for birds. It does not normally affect humans, but since 1997 there have been cases of transmission of the virus to humans, most of whom have had direct contact with infected birds or surfaces contaminated with H5N1. The H5N1 virus was first isolated in 1996 on a goose farm in the Guangdong region of China, and since 1997 this type of infection has been reported in humans. Highly pathogenic avian influenza H5N1, also known as "bird flu", has led to the death of hundreds of millions of birds globally in recent years. Its spread to humans and other mammal species, including cattle and pigs in the United States. Between 2023 and early 2025, the world experienced a sustained and unprecedented panzootic evolution of highly pathogenic avian influenza (HPAI) H5N1 (clade 2.3.4.4b). This period was marked by the spread of the virus to new geographic regions—including Antarctica and South America—a significant increase in infections among mammals and sporadic cases in humans, which raised concerns among health officials.

Keywords: avian influenza, highly pathogenic, panzootic, pandemic.

49. Influence of Farming System on the Quality of Frozen Ram Semen Evaluated by the CASA System

Dorina NADOLU[1], Zoia Camelia ZAMFIR[1*], Andreea Hortanse ANGHEL[1,2*], Laura MARINICĂ[2], Elena ILIŞIU[1], Oana Corina PREŞA[1], Ana ENCIU

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Abstract:
In the current climatic and epidemiological conditions, interest in the application of reproductive biotechnologies, namely artificial insemination with frozen ram sperm, has increased among sheep breeders. In the context of establishing and implementing technical measures to reduce the carbon footprint on farms, production and reproduction indices were monitored in different exploitation systems. From a reproductive perspective, the quality of semen collected from two rams raised in permanent housing and from two other rams exploited on pastures was

determined. The determination of the quality of frozen semen was carried out with the CASA system, observing differences between the frozen semen from rams maintained in two exploitation systems, an important role in addition to the individual factor being played by environmental factors, nutrition and activity level that influence the reproductive function. Statistical analysis of semen parameters revealed that rams raised in stables had significantly higher values of normal morphology compared to those raised on pasture (p=0.0015) but with higher values of spermatozoa presenting the proximal drop (0.0169). Frozen sperm from rams raised on pasture had significantly higher values of motility (p=0.0046) with an average of 10 ejaculates of 39.35% compared to 30.56% in the case of rams raised in stables. The grazing system, characterized by a high level of activity and nutritional variability, can stimulate sperm motility, but can also favor the appearance of certain morphological anomalies.
Keywords: motility, progressive motility, sperm abnormalities

50 Reducing the carbon footprint associated with cow milk production based on ration structure

Neamt Radu[1*], Neculai Dragomir[1], Saplacan Gheorghe[1], Neciu Florin[1], Mihali Ciprian[1], Mizeranschi Alexandru[1], Cziszter Ludovic[1,2]

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Abstract:
The aim of the current research was to assess the possibility to reduce the milk specific carbon footprint. In this respect, different botanical structures were tested. The cows were random associated to one of four botanical groups based on alfalfa, chicory, and Sudan grass and gramineous. The carbon content of the forages was determined by wet oxidation protocol. The milk yield was assessed according to botanically structures based on Performances Recording Scheme. Unifactorial ANOVA protocol was performed in order to test the ration differences occurred related to milk yield and carbon footprint. The carbon footprint was evaluated in respect with botanical structures and milk yield. The higher milk yield was associated to chicory (20.11±0.74 kg/day) compared to alfalfa (17.1±0.17 kg/day), Sudan grass (15.8±0.26 kg/day) and gramineous (15.1±0.9 kg/day), the differences being significant ($p \leq 0.01$). In terms of carbon, the milk yield obtained from chicory-based ration recorded the lower carbon footprint (3.17 kg CO_2 eq/kg milk) compared to alfalfa, Sudan grass and gramineous (3.48, 3.51, 4.1 kg CO_2 eq/kg milk, $p \leq 0.001$). The chicory proved the efficiency in milk production compared to legumes and gramineous due to an increased palatability. Based on the high carbon storage capacity and milk production, the specific carbon footprint of chicory was the lowest. The positive effects in reducing the milk carbon footprint and increasing milk yield rightfully recommend the chicory as an appropriate forage in cows feeding.
Keywords: carbon footprint, cows, forages, milk yield.

Acknowledgments
This work was supported by a grant of the Romanian Ministry of Agriculture and Rural Development, throughout the projects ADER 8.1.1/14.07.2023

51. Phytotherapy, the Role of Medicinal Plants in Ensuring the Health of Broiler Chickens

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Abstract:
Current poultry farming systems focus on ensuring the best possible health of the flocks, a key factor in achieving high production performance and increasing economic efficiency. Amid growing concerns regarding the use of antibiotics in farm animals, phytotherapy is gaining more supporters due to the antioxidant, anti - inflammatory, and immunomodulatory properties of plants, which is why it is considered the most viable natural alternative to synthetic additives. This review paper aims to present the characteristics and properties of the main medicinal plants used in poultry production, as well as the mechanisms of action of the active compounds on metabolism, immune response, and digestion in broiler chickens, both under normal rearing conditions and under stress conditions. The results of various studies conducted in this regard highlight the beneficial effects of phytotherapy in maintaining health and optimizing productive performance in broiler chickens, regardless of the rearing system used.

Keywords: nutrition, natural alternatives, poultry, phytogenic additives

52. THE IMPACT OF HEAT STRESS ON INTESTINAL HEALTH IN BROILER CHICKENS – PHYTOTHERAPEUTIC PERSPECTIVES

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Abstract:
One of the most significant challenges facing modern poultry farming is heat stress, a phenomenon that is becoming increasingly prevalent due to climate change. Exposure to high temperatures in broiler chickens disrupts intestinal homeostasis, leading to microbiological, structural, and functional changes that affect both growth performance and welfare. Oxidative stress induced by heat stress increases intestinal permeability and alters the morphology of intestinal villi, thereby compromising the integrity of the intestinal barrier and promoting the onset of an inflammatory response mediated by pro-inflammatory cytokines. A complementary strategy to mitigate the effects of high temperatures involves the use of phytogenic compounds, as they are credited with antioxidant, anti-inflammatory, antimicrobial, and immunomodulatory properties. Phytotherapeutic interventions contribute to improving the antioxidant system, restoring intestinal morphology, and stabilizing the gut microbiota, with the ultimate effect being improved nutrient absorption. This paper aims to synthesize current information regarding the

impact of heat stress on intestinal physiology and to highlight the role of phytotherapy as an effective strategy for maintaining intestinal health.

Keywords: phytogenic additives, broiler chickens, gut health

53. Accounting for biological variability in enteric methane emissions: implications for life cycle assessment of beef cattle systems

Ana-Iulia NICODIM [1*], Ionela-Florentina TOMA [1], Mihaela-Maria LĂPĂDAT [1], Andreea-Maria PÎNDARU [1, 2], Răzvan Alexandru POPA [1]

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Abstract:
Climate-related outcomes reported in life cycle assessment (LCA) studies of beef cattle systems often vary across production settings and methodological approaches, particularly in relation to the estimation of enteric methane emissions. Enteric methane constitutes a substantial portion of the greenhouse gas emissions profile in beef production systems; therefore, variation in enteric methane emissions is important for the interpretation of environmental assessment results. These differences arise from ruminal fermentation processes influenced by microbial activity, hydrogen metabolism, feed characteristics, and the combined effects of diet, animal-specific factors, and management practices. This review critically evaluates the microbial and other fermentation related determinants of enteric methane production in beef cattle systems and assesses their implications for LCA. It synthesizes current understanding of the biological mechanisms underlying enteric methane production, the impact of feed composition and fermentation dynamics, and the extent to which biologically driven variability in methane emission is incorporated into LCA studies. The review further identifies methodological challenges that hinder comparability across studies, such as inconsistencies in methane estimation techniques, functional units, system boundaries, and reporting standards. By connecting rumen microbial processes with system-level environmental assessment, this review offers a more integrated framework for interpreting LCA results in beef cattle systems and outlines priorities for future evaluations that are both biologically informed and methodologically transparent.

Keywords: greenhouse gas emissions, environmental assessment, fermentation dynamics, beef production

54. Competencies Required for the Zootechnical Engineer in the Context of Current Labor Market Demands

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Abstract:
The paper entitled "Adapting the skills of the animal engineering engineer to the current demands of the labor market" analyzes the recent transformations in the animal engineering field and their impact on the professional profile of specialists in this sector. In the context of globalization, digitalization and increasing concerns regarding sustainability and animal welfare, the labor market requires increasingly diversified and interdisciplinary skills. The study highlights the fact that the animal engineering engineer is no longer just a specialist in animal breeding and exploitation, but a complex professional, capable of integrating knowledge from areas such as farm management, digital technologies, animal nutrition, biosecurity and environmental protection. Thus, the need for continuous adaptation of skills is outlined in order to meet the demands of a dynamic and competitive labor market. The research methodology is qualitative and is based on the analysis of specialized literature, international reports and current trends in the animal engineering field. The essential skills required are identified, as well as the use of modern technologies (automated monitoring systems, sensors, management software), the ability to analyze and make decisions, critical thinking, as well as communication and teamwork skills. The research results emphasize the importance of integrating digital and sustainability-oriented skills into the professional training of zootechnical engineers. It also highlights the need to develop flexible educational programs, adapting to the requirements of the labor market and correlated with the needs of the agricultural sector. In conclusion, the paper highlights the strategic role of the zootechnical engineer in ensuring the efficiency and sustainability of animal production systems. Adapting professional skills and promoting continuous learning are essential for successful integration into the labor market and for an adequate response to the current and future challenges of the zootechnical sector.

Keywords: sustainability, animal welfare, continuous adaptation, challenge, professional training

55. Sustainable Processing of Animal Products in the Context of the Circular Economy

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Abstract:
The paper entitled "Sustainable processing of animal products in the context of the circular economy" aims to analyze how the principles of the circular economy can be integrated into the animal products processing industry, in order to reduce the impact on the environment and increase the efficiency of resource use. In the context of increasing pressure on natural resources and the need to reduce greenhouse gas emissions, the adoption of sustainable production and processing models becomes essential. The study highlights the fact that the animal products industry generates significant amounts of waste and by-products, which, within a linear economic model, are insufficiently valorized. By applying the principles of the circular economy, these flows can be reintegrated into the production chain, contributing to reducing losses and creating added value. Practices such as the reuse of by-products, the valorization of organic waste to obtain biogas or compost, and the efficient use of water and energy in technological processes are analyzed. The research methodology is qualitative and is based on the analysis of specialized literature, relevant case studies and European policies on the circular economy and sustainability in the food industry. The results indicate that the implementation of innovative technologies and sustainable management strategies can lead to a significant reduction in environmental impact, while increasing the economic competitiveness of operators in the sector. The paper also highlights the essential role of technological innovation, digitalization and collaboration between actors involved in the agri-food chain. In conclusion, sustainable processing of animal products, based on the principles of the circular economy, represents a strategic direction for the sustainable development of the food sector, and it is necessary to support it through coherent public policies, investments and adequate professional education.

Keywords: reduction, efficiency, added value, competitiveness, sustainable development

56. Effect of dietary basil essential oil supplementation on performance and egg quality of laying hens

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Abstract:
This study aimed at investigating the effect of dietary supplementation with basil essential oil (BEO, Ocimum basilicum L.) on laying performance and egg quality of laying hens. A total of 30 ISA Brown laying hens, 25 weeks of age, were allocated to three experimental groups/treatments (BEO0, BEO1000 and BEO2000), with 10 hens per group. They were housed in 5 cages (replicates) per treatment, with 2 hens per cage, and were fed a fixed amount of feed (mixed-form concentrated feed mixture, 120 g/hen/day). Basil essential oil (BEO) was added to the feed at inclusion levels of 0, 1000, and 2000 mg/kg for treatments BEO0 (control), BEO1000, and BEO2000, respectively. The trial lasted 8 weeks (56 days). Throughout the experimental period, no differences ($P>0.05$) were observed in feed intake (119.55 g/hen/day), egg production (0.953 eggs/hen/day), production of broken, soft-shelled, and shell-less eggs (0.007 eggs/hen/day), egg weight (59.65 g), egg mass (56.92 g/hen/day), or feed conversion ratio (2.10 g feed/g egg mass). Additionally, shell weight (6.23 g vs. 5.85 g), yolk diameter (39.04 mm vs. 38.29 mm), and albumen diameter (69.72 mm vs. 66.27 mm) decreased (L: $P<0.05$), as did shell thickness (0.39 mm vs. 0.35 mm) (L: $P<0.01$), with increasing levels of basil essential oil in the diet. In contrast, albumen height (11.21 mm vs. 12.93 mm), albumen index (16.14 vs. 19.84), and Haugh units (104.29 vs. 110.46) increased (L: $P<0.05$) as the dietary inclusion level of basil essential oil increased. Other egg quality characteristics were not affected ($P>0.05$). In conclusion, supplementation of laying hens' diets with basil essential oil at levels up to 2000 mg/kg did not affect laying performance, however, it reduced shell weight and thickness, as well as albumen and yolk diameter, while increased albumen height, albumen index, and Haugh units of the eggs.
Keywords: Ocimum basilicum, feed ingredient, egg yield, egg characteristics

57. Use of oleoproteaginous seeds as protein sources to modulation the broilers' intestinal microbiome

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Abstract:
This study evaluates the effect of inclusion the oleoproteaginous seeds (flax, camelina and hemp) as protein alternative to soybean meal substitution in broiler diet enriched in polyunsaturated fatty acids (PUFA) on the intestinal microbial populations and health status of broiler, for 42-day feeding trial (192, day-old Ross 308 chicks; 4 groups; 8 chick/replicate). For ten days, all groups received the same basal diet, and that, the experimental diet formulations were included: 6% flaxseed (E1), 10% camelina seeds (E2) and 15% hemp seeds (E3) compared to C diet. Prior to slaughter (42 days old of bird), the blood samples were aseptically collected to determine the biochemical analysis and caecal and intestinal content were collected for microbiological examination. The Lactobacillus population in the ileum was significantly higher ($p = 0.008$) in group E1 (7.94 lg10 CFU/g wet ileum content) compared to group C, with no notable differences observed among the other experimental groups. The serum protein profile were significantly lower ($p = 0.008$) for urea concentration in E2 (3.76 mg/dL) and E3 (3.75 mg/dL) compared to the C group (4.49 mg/dL). The AST concentrations for E1 was significantly higher compared to C (87.12 U/L) and E2 (86.99 U/L), while the lowest value registered in the E3 group (74.47 U/L). Conversely, for alkaline phosphatase values, significantly lower results ($p = 0.029$) were observed for E1 (157.6 U/L) compared to C (222.18 U/L) and E2 (217.84 U/L) groups, while the highest concentrations were recorded for E3 (226.62 U/L). The addition of dietary oleoproteaginous seeds had a positive effect in limiting the development of the pathogenic bacteria only in the small intestine, thus, improving the microbial balance as flaxseed witch increasesd the content of lactobacillus in the ileum, and camelina and hemp show distinct effects on biochemical profiles, indicating potential implications for broiler health.

Keywords: broiler, biochemical parameers diet, hemp, camelina, flaxseed, intestinal microflora balance

58. Nutritional value and antioxidant potential of silkworm pupae and soybean in broiler diets

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Abstract:
Efforts to reduce dependence on soy-based feed ingredients have been intensified due to the growing demand for sustainable protein sources in poultry feed. Due to their high nutritional value and beneficial properties, silkworm (*Bombyx mori*) pupae, a byproduct of sericulture, have emerged as a promising substitute. As a preliminary assessment of their potential use in the diet of broiler chickens, this study compared the chemical composition, fatty acid profile, and antioxidant status of whole-fat silkworm pupae and whole-fat soybeans. According to the analysis of basic components on dry matter basis, silkworm pupae had higher levels of crude fat (25.8%) and crude protein (53.5%) than soybeans (20.1% and 39.2% respectively). In contrast, soybean exhibited higher ash (5.5% vs 4.3%) and crude fiber content (5.8% vs 3.3%), primarily derived from plant cell wall components rather than the chitin-associated carbohydrate fraction. Based on these results, silkworm pupae constitute a feed ingredient with a high protein and energy content. Significant differences were observed in fatty acid composition, with silkworm pupae showing markedly higher levels of α-linolenic acid (30.46% vs 5.37%, $P<0.001$) and total ω3 fatty acids (30.53% vs 5.39%, $P<0.001$), resulting in a substantially lower ω6/ω3 ratio (0.19 vs 9.53, $P<0.001$), while soybean contained higher linoleic acid, ω6 fatty acids, and total PUFA (56.67% vs 36.39%, $P<0.001$). The water-soluble antioxidant capacity of silkworm pupae was significantly higher (TEAC_water: 24.68±1.56 vs. 21.43±1.25 mmol/100 g, P=0.003) and there was no diferrences on the total antioxidant capacity, total phenolic content, or lipid-soluble antioxidant capacity. In conclusion, compared to soybean, silkworm pupae show superior protein and fat content, a highly favorable ω3-rich fatty acid profile, and comparable antioxidant properties, indicating their potential as a sustainable alternative feed ingredient and supporting the need for additional in vivo evaluation in broiler nutrition.

Keywords: Alternative protein sources, insect-based feed, chemical composition, antioxidant properties, ω3 fatty acids

59. Effect of plant-based feed additives on egg quality and yolk oxidative stability in laying hens

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Abstract:
The aim of this study was to investigate the effect of plant-based feed additives in the diet of laying hens on egg quality, antioxidant profile, and the fatty acid composition of the yolk. The experiment lasted 56 days and was conducted with ISA Brown hens. A total of seven experimental groups were used: one control group that received a conventional diet and six groups that received diets supplemented with garlic, onion, or paprika at inclusion levels of 2.5 and 5 g/kg of feed. Each group consisted of six cages, with two hens per cage. Eggs were collected every two weeks (days 14, 28, 42, and 56) and evaluated for various quality parameters. The antioxidant profile of the yolk was evaluated by determining malondialdehyde (MDA), total antioxidant capacity (TAC), and total phenolic content (TPC), while the fatty acid profile was determined by gas chromatography (GC-FID) using yolk samples from the final sampling point. The results showed that dietary supplementation with plant-based additives did not significantly affect most egg morphometric characteristics. However, yolk color was significantly increased in the paprika groups, particularly at the higher inclusion level. In addition, the antioxidant profile improved, with reduced MDA values and increased TAC, mainly in the paprika groups and secondarily in the onion groups, while the highest TPC values were observed in the high-dose paprika group. Regarding the fatty acid profile, total polyunsaturated fatty acids (PUFAs) were significantly increased ($p<0.001$), ranging from 8.52 g/100 g yolk fat in the control group to 10.38 g/100 g in the paprika 5 g/kg group. Similarly, omega-6 fatty acids were significantly elevated ($p=0.004$), increasing from 7.97 to 9.53 g/100 g yolk fat. Overall, the results indicate that incorporating plant-based additives into the diet of laying hens can improve the antioxidant profile and certain quality characteristics of the eggs, with paprika, particularly in the high-dose, showing the most positive effect.
Keywords: dietary supplementation, paprika, onion, garlic, egg characteristics, PUFAs

60. An Ecological Assessment of the Fish Fauna in the Upper Course of the Crasna River, North-Western Romania

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Abstract:
In this study, the ichthyofauna of the upper course of the Crasna River was analyzed in order to assess the diversity, structure, and ecological status of fish communities along its course. Through field sampling and the application of ecological indices, species composition, abundance, and habitat preferences of the identified species were evaluated. Nine sectors of this watercourse were established and surveyed, each sector having lengths ranging between 150 and 200 meters. A total of 15 fish species were identified, belonging to three orders and eight families, as follows: Ord. Cypriniformes (Fam. Acheilognathidae: *Rhodeus amarus*; Fam. Cobitidae: *Cobitis elongatoides*; Fam. Cyprinidae: *Barbus carpathicus*, *Carassius gibelio*; Fam. Gobionidae: *Gobio carpathicus*, *Pseudorasbora parva*; Fam. Leuciscidae: *Squalius cephalus*, *Alburnoides bipunctatus*, *Alburnus alburnus*, *Rutilus rutilus*, *Leuciscus aspius*; Fam. Nemacheilidae: *Barbatula barbatula*), Ord. Perciformes (Fam. Percidae: *Perca fluviatilis*, *Gymnocephalus cernua*), and Ord. Centrarchiformes (Fam. Centrarchidae: *Lepomis gibbosus*). The frequency, percentage share of fish species, and the number of captured individuals varied among sectors. The number of fish species increased as the altitude of the surveyed sectors decreased. Thus, while only two species were identified in Sector 1, located at the highest altitude, 11 species were recorded in Sector 7, situated at a lower altitude. Considering all surveyed sectors, the highest percentage share was recorded for Danubian barbel (26.8%), while asp and pumpkinseed showed the lowest proportions (0.1% of each). Based on the obtained data, a relatively high diversity of fish populations was observed in the upper course of the Crasna River, with a complex community structure for a river of relatively small size, characterized by diverse habitats, despite being subject to anthropogenic pressures..

Keywords: fish biodiversity, ecological indices, electrofishing, anthropogenic factors

61. Spatial Distribution and Ecological Status of Fish Communities in the Lower Course of the Lăpuș River, North-Western Romania

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Abstract:
The aim of this study was to determine the ichthyofaunal structure, conservation status, and fish biodiversity indices in the lower course of the Lăpuș River, Maramureș County. Using electrofishing techniques, six river sectors were surveyed, each with lengths ranging between 150 and 200 meters and characterized by different geomorphological and hydrological features. A total of 11 fish species belonging to five families were identified, as follows: Fam. Leuciscidae (*Alburnus alburnus*; *Squalius cephalus*; *Alburnoides bipunctatus*; *Chondrostoma nasus*; *Vimba vimba*), Fam. Cyprinidae (*Barbus barbus*; *Carassius gibelio*), Fam. Gobionidae (*Gobio carpathicus*; *Pseudorasbora parva*), Fam. Acheilognathidae (*Rhodeus amarus*), and Fam. Centrarchidae (*Lepomis gibbosus*). The numerical and percentage composition of species varied among sectors. Overall, in terms of relative abundance, European chub (26%) showed the highest proportion, followed by bitterling (24%), bleak and spirlin (each with 15%), Carpathian gudgeon (9%), common barbel (4%), nase and pumpkinseed (each with 2%), while vimba bream, Prussian carp, and stone moroko each accounted for 1%. The obtained results reflect a relatively good and balanced ecological status of this river segment, with a relatively low proportion of invasive species. The relatively high abundance of bitterling indicates good water quality and the absence of significant pollution sources. Bitterling is considered an indicator species, sensitive to pollution and requiring high levels of dissolved oxygen. In general, its disappearance indicates a degraded aquatic ecosystem, which is not the case in the lower course of the Lăpuș River..

Keywords: freshwater species, electrofishing, submontane zone, diversity, conservation status

62. ERADICATION OF *DERMANYSSUS GALLINAE* IN INDUSTRIAL POULTRY PRODUCTION

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Abstract:
The multi-decade increases in the prevalence of *Dermanyssus gallinae* in poultry production, together with all its harmful consequences, is the best indicator of the ineffectiveness of the control measures implemented to date. This experience should serve as a call to re-evaluate the current approach to the control of *D. gallinae*. In order to halt and subsequently reverse this negative trend, the primary objective of control, instead of suppression, should be the elimination—eradication—of *D. gallinae* from industrial facilities and farms.
Eradication of *D. gallinae* is a demanding and conditional, yet feasible, health- and environmentally justified and economically most cost-effective procedure. Under certain conditions, it can be achieved using acaricides, SiO_2, inert oils, and/or their combinations. However, the possibility of eradicating *D. gallinae* has not been accepted to date. The strictest criterion for evaluating eradication success has been established, namely that during regular inspections not a single *D. gallinae* specimen may be detected for at least one year after completion of the control program and restocking of the flock. Under these criteria, the presented study results unequivocally confirm the possibility of eradicating *D. gallinae* from production facilities and farms.
Keywords: *Dermanyssus gallinae,* poltry production, eradication

63. Gastrointestinal Helminths of Small Ruminants in Banat (Vojvodina, North Serbia)

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Abstract:
During our study performed in Vojvodina in period from 2014 to 2015, from Banat District we collected fecal samples from 97 herds of small ruminants (sheep and goats) totaling over 1,300 animals. Examination was performed using standard coprological technique. During our examination 374 sheep and goats we were examined by post-mortem examination. Determination of adult parasites and eggs of parasites were done by morphological

characteristic. During post mortem examination we occurred: Teladorsagia (Ostertagia) circumcincta in 92.23% of animals, O.ostertagi (31.33%), O.ocidentalis (12.33%), Trichostrongylus axei (98.60%), T. colubriformis (91.57%), Nematodirus spathiger (100.00%), N. filicollis (22.31%), Haemonchus contortus (89.95%), Marshallagia marshalli (31.77%), Skrjabinema ovis (11.28%), Bunostomum trigonocephalum (15.28%), Chabertia ovina (69.14%), Oesophagostomum venulosum (24.39%), Cooperia curticei (50.52%), C. oncophora (7.29%) and C. punctata (2.26%). The intensity of infection and polyparasitsm was monitored in relation to the age of sheep and goats. It was found that in younger animals' intensity of infection was lower than that of older animals. At the beginning of our research, conducted in March, the real extent of gastrointestinal infections strongilidae was 83.33%, after which he soon reached a level of 100% in the same way and moved to the end of follow-up period.

Keywords: max. *goat, sheep, gastrointestinal parasites, Banat, Vojvodina, Serbia*

64. Random regression model for estimation the genetic parameters for growth traits in Charolais breed

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Abstract:
The aim of this study was the estimation the genetic parameters with random regression model for growth traits in Charolais cattle breed. The records were the body weight at birth, 200 and 365 days. The pedigree consisted in 2213 cattle: 159 sires, 1025 dams and 1029 cattle with records. The data were from Romanian Breeding Association for beef cattle. The mean for birth weight was 40.297±0.202 kg, for weaning weight was 220.287±1.296 kg, and the mean for weight at 365 days was 330.275±2.097 kg. The heritability for the birth weight and body weight at 200 and 365 days was 0.244, 0.519, 0.561. The genetic correlations between body weight at 1, 200 and 365 days were positive. The random regression model was adequate to estimate the genetic parameters for growth traits in Charolais beef cattle breed for selection. For increase the profitability of farms it is necessary to improve the growth traits.

Keywords: cattle, body weight, selection, heritability

65. The genetic parameters for growth traits in Aberdeen Angus breed using random regression model

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Abstract:
The aim of present study was the estimation of the genetic parameters for growth traits in Aberdeen Angus beef cattle breed with random regression model. The records were the body weight at birth, the weight at 200 days and the weight at 300 days. The pedigree consisted in 2102 cattle: 154 sires, 948 dams and 1000 cattle with records. The data were from Aberdeen Angus Association beef cattle. The heritability for the birth weight and body weight at 200 and 300 days was 0.288, 0.594, 0.596. The genetic correlations between body weight at 1, 200 and 300 days were positive. The genetic correlation between 200 and 300 days was high 0.486. By improvement of production traits increase the economic efficiency. Trough random regression coefficients, individual variation of genetic and permanent environmental effect in the same animal during growth can be explained. Using random regression model increases the accuracy of the selection by using more performances.

Keywords: cattle, body weight traits, selection, heritability

66. Impact of Natural Nitrite Substitutes on Color Stability and Lipid Oxidation in Cured Meat Products

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Abstract:
Nitrites fulfill two critical and interconnected roles in cured meat products: the stabilization of the characteristic pink color through nitrosylmyoglobin formation, and the inhibition of lipid oxidation via heme iron chelation and oxygen scavenging. The enforcement of Commission Regulation (EU) 2023/2108, which reduces the maximum permissible nitrite level from 150 mg/kg to 80 mg/kg for general meat products as of October 2025, has accelerated the search for effective natural substitutes capable of replicating these specific functions. This review critically examines the impact of natural nitrite alternatives on color stability and lipid oxidation in cured meat products. Vegetable-derived nitrate sources particularly celery, beetroot, and Swiss chard represent the most widely studied strategy, with studies reporting higher initial redness values compared to synthetic nitrite, but significantly greater total color change during storage, indicating reduced long-term color stability. With respect to lipid oxidation, celery

powder-based systems showed TBARS values comparable to nitrite controls when combined with appropriate nitrate-reducing starter cultures. Polyphenol-rich plant extracts, including rosemary, grape seed, and clove, demonstrated relevant antioxidant activity, while combined strategies incorporating vegetable powders, starter cultures, and natural reductants achieved curing efficiencies exceeding 79%, with simultaneously suppressed lipid oxidation markers. The review concludes that while natural alternatives can partially replicate the antioxidant and colorimetric functions of synthetic nitrite, achieving the consistency and stability of conventional curing systems remains a key technological challenge, requiring optimized multi-component formulations tailored to specific product categories.

Keywords: clean label, color stability, lipid oxidation, nitrosylmyoglobin, polyphenols, starter cultures

67. Biodiversity and spatial structure of epigeic groups in agroecosystems

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Abstract:
Biodiversity is of fundamental importance on Earth, with ecosystems and biodiversity being interconnected and interdependent. The diversity of species and ecosystems offers important information about the state and quality of the environment, as well as about possible changes in ecological factors that may be caused by human activity. The aim of the work was to evaluate the occurrence and representation of epigeic groups in the Helianthus annuus crop, during the growing season in 2022, within the framework of a conventional management system. The ground trap method was used. The material was collected from May to October, at the Veľký Kýr site, in two repetitions. 19 epigeic groups with a number of 2,492 specimens were determined. When assessing the abundance, the eudominant representation was shown by Coleoptera (27.45%), Acarina (16.06%) and Collembola (15.08%). In the second repetition, the groups Coleoptera (24.44%), Collembola (15.69%), Formicoidae (11.92%), Acarina (11.41%) and Opilionida (11.41%). The degree of diversity according to Shannon Weaver reached a value of 1.57. The degree of diversity according to Shannon Weaver reached a value of 1.57 for the annual sunflower crop. The presence of edaphic groups plays an important role in ecological balance, contributes to biodiversity, indicates the state of the habitat, which is of fundamental importance in relation to humans.

Keywords: Acarina, agroecosystems, Colembola, Coleoptera, epigeic groups, *Helianthus annuus*

68. Evaluation of the biodiversity of epigeic groups depending on the crops grown in different types of agroecosystems

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Abstract:
Research on the biodiversity of epigeic groups was carried out using ground traps at two locations, namely on arable land and in an apple orchard. The collection of biological material took place during 2024 from May to December. In each selected location, 8 collections were carried out, approximately at monthly intervals, with a total number of 1370 collected individuals, of which 783 specimens were collected on arable land and 587 in an apple orchard. The highest number of individuals in both locations was collected in the period from June to August. The species identity index according to Jaccard reached a value of 78.95%. The dominance index according to Renkonen was 70.94%. The diversity index according to Shannon – Weaver was on average 2.00532. The lower value (1.86065) was achieved by the arable land site, while the highest value (2.14999) was recorded in the apple orchard. Based on the above, it can be stated that the observed sites were generally similar in terms of diversity and achieved a high level of biodiversity in terms of stability.

Keywords: biodiversity, dominance, earth traps, ecosystem, epigeic groups

69. Research on carcass examination in the slaughterhouse of different cattle breeds

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Abstract:
The slaughter of cattle involves a sequence of operations such as stunning, bleeding, skinning, evisceration and cutting. The carcass and the organs accompanying the animal must be subjected to a post-mortem inspection immediately after slaughter. Depending on the result of the examination of the organs, the carcass can be examined superficially or in detail, so that it can be assessed whether the changes that occurred in the organs had repercussions on the carcass or not. The organs are examined taking into account the following aspects: the covering serosa, the parenchyma itself and the adjacent lymphocenters. The actual examination of the carcass is usually carried out by inspection - overall and in detail and palpation. The primary examination of organs and carcasses in cutting units is carried out by macroscopic methods - such as inspection, palpation and sectioning. If deemed

necessary, additional examinations are carried out, such as palpation and incision of certain parts of the carcass and edible organs, as well as laboratory testing to diagnose or confirm a certain pathology, bacterial infection, or the presence of certain residues above the permitted limits. All these operations are carried out taking into account the legislation in force, regarding both the actual slaughter and ensuring the well-being of the cattle, from transport to the resting period before slaughter.

Keywords: health, diagnosis, pathology, inspection, changes.

70. Mapping ecosystem services as a method for evaluating the ecological, social, and economic benefits of restoration efforts

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Abstract:
The restoration of ecological systems is a major challenge of the 21st century, requiring integrated approaches that combine ecological, social, and economic dimensions to fully capture the benefits ecosystems provide to society. In this context, ecosystem services mapping has emerged as a key tool for assessing and communicating these benefits, supporting informed decision-making and stakeholder engagement. The Danube Floodplain illustrates this need. In the 1960s, large areas were embanked, drained, and converted from wetlands into agricultural land, driven by a limited understanding of the long-term benefits of natural systems and a focus on short-term economic gains such as agricultural production. Today, the Lower Danube Floodplain highlights the potential of ecological restoration to support climate change adaptation, reduce hydrological risks, and revitalize local cultural and economic values. Different development scenarios—from non-intervention to full restoration using nature-based solutions—allow the evaluation of key ecosystem services. These include regulating services (flood protection, water purification, carbon storage), provisioning services (natural resources), and cultural services (recreation, identity, education). While provisioning services dominate in the short term under current conditions, broader evaluations show that restored ecosystems generate higher overall economic and societal value when all services are considered. Integrating ecosystem services assessments into planning and policy provides a strong foundation for sustainable decision-making. Moreover, ecosystem services mapping functions as a transdisciplinary tool for comparing restoration scenarios and improving communication among stakeholders. The case of the Danube Floodplain underscores the importance of collaboration between researchers, decision-makers, and local communities in developing effective restoration strategies and enhancing socio-ecological resilience. The proposed methodology is transferable and can be applied to other European wetlands, supporting large-scale ecological restoration objectives.

Keywords: ecosystem services mapping, GIS, restoration, wetlands

71. CRISPR/Cas9-Mediated Targeted Knockout of the Peroxidasin-Like Gene (PXDNL) in Rabbit Reveals a Novel Non-Rodent Model

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The peroxidasin-like protein (PXDNL) is a non-enzymatic peroxidase homologue that is expressed almost exclusively in cardiomyocytes and implicated in dilated cardiomyopathy, yet its in vivo function remains poorly understood. As rodents lack the Pxdnl gene, a rabbit model is particularly suitable because rabbit cardiac physiology, anatomy and early embryonic development more closely resemble those of humans, and PXDNL is robustly expressed in rabbit heart.
The aim of this work was to generate a PXDNL knockout (KO) rabbit line to investigate the consequences of PXDNL loss of function and to clarify its potential role in cardiac function. Single guide RNAs were designed to target the first coding exon of the rabbit PXDNL gene, and a mixture of CRISPR/Cas9-guide RNA was microinjected into New Zealand White rabbit zygotes to introduce disruptive mutations by error-prone non-homologous end joining.
Founder animals were identified, and following initial characterization of the induced mutations, a single founder carrying a PXDNL allele predicted to have an early stop codon was selected for breeding to establish a mutant line.
The established PXDNL KO rabbit line provides the first non-rodent in vivo model to study PXDNL function and its contribution to cardiac remodeling. CRISPR/Cas9 off-target analysis revealed no detectable off-target mutations. Ongoing work includes the generation of a homozygous knockout population for downstream experiments and the development of rabbit-specific PXDNL antibodies. The main objective is comprehensive cardiovascular phenotyping to relate molecular alterations to functional outcomes.

Keywords: peroxidasin-like protein; CRISPR/Cas9; rabbit model; genome editing

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72. Research on the impact of welfare on productive performance in pigs

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Abstract:
Animal welfare, including that of pigs, is a matter of general interest and is a branch of veterinary medicine that aims to study the individual condition of animals, as a result of their attempt to adapt to the environment they live in. Public health, food safety and consumer protection are some of the implications of welfare. The study of welfare also has implications for the design of new pig breeding and exploitation systems, as well as for the improvement of existing systems. Welfare assessment is carried out by observing the animals in their living conditions, during feeding and watering, during rising from recumbency and adopting recumbency, defecation and urination, and skin condition. Also, the welfare of pigs at the farm level can be assessed based on behavioral indicators, on the basis of integrative systems and HACCP systems. The welfare of pigs is ensured both at the shelter level, namely the microclimate conditions, the area allocated to each individual in the shelter, the feeding area, care and maintenance, as well as during transport and stay in the slaughterhouse, until stunning. In our country, ANSVSA is the one that manages the welfare of pigs, but also of other animals.

Keywords: transportation, farm, safety, environment, life.

73. The effect of different dietary protein levels on the production of Enchytraeus buchholzi (Grindal)

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Abstract:
Enchytraeus buchholzi (Grindal worm) represents a valuable source of live feed used in aquaculture and aquaristics, due to its high content of proteins and essential lipids. The aim of the study was to evaluate the influence of different feed sources on biomass production and feed conversion efficiency in this species. The experiment was conducted over a period of 30 days, using 5 experimental variants (M, V1–V4), each under controlled conditions, on a moss substrate (Polytrichum commune) with a humidity of approximately 84%. In all variants, the same amount of feed (338 g) was administered, the differentiation being made by its composition, especially by the protein level (M –

4.05%, V1 – 4.36%, V2 – 4.76%, V3 – 5.16%, V4 – 5.55%). The results highlighted significant increases in biomass in all experimental variants compared to the control (2.91 g). The obtained results demonstrate that optimizing feed composition, especially by increasing protein intake, leads to improved productive performance. In conclusion, variant V3 (5.16% crude protein) proved to be the most efficient and is recommended for use in sustainable live feed production systems.

Keywords: Enchytraeus buchholzi, Grindal biomass, protein level, feeding optimization.

74. Mathematical Modeling of Bacterial Growth Using Spline Interpolation and Nonlinear Models

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Abstract:
Bacterial growth modeling is important in food biotechnology, agricultural microbiology, and veterinary medicine. Mathematical models allow estimation of biological parameters and optimization of fermentation processes.
This study analyzes bacterial growth using optical density (OD600) measurements over time. Mathematical tools such as interpolation and growth parameter estimation were used to describe the dynamics of microbial biomass. Key biological parameters including growth rate, lag time, and doubling time were estimated from the experimental data.
Optical density (OD600) measurements were recorded over a 20-hour growth experiment. Interpolation was used to visualize the growth curve and numerical differentiation was used to estimate growth rate parameters.
The estimated parameters are consistent with typical bacterial growth patterns observed in laboratory cultures. The interpolation curve provides a smooth visualization of biomass increase during the exponential phase and the stationary phase.
Mathematical modeling provides a useful framework for analyzing microbial growth dynamics. The methods demonstrated here can be applied in biotechnology, food fermentation studies, and microbial ecology research.

Keywords: Logistic model, Gompertz model, polynomial regression, growth kinetics.

75. Multidimensional analysis of social development and inequality in The European Union: a PCA approach

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Abstract:
This paper aims primarily to follow aspects related to development and social inequalities in the countries of the European Union. The aim is to have a competitive and strong economy, a high standard of living, access to education and healthcare. Regional development policy is one of the most important and complex policies of the European Union (Pike et al., 2016).
The aim of the paper is to compare socio-economic indicators in the countries of the European Union, using principal component analysis (PCA) to identify groups of statistical indicators that explain the level of development and social inequalities.
The nine statistical indicators from the European Union countries were taken into account: Gross Domestic Product (GDP) per capita, Consumer Price Index (CPI) - %, Employment rate - %, Poverty and social exclusion rate - %, Gini coefficient score - %, Life expectancy at birth – year, The deficit and the public debt - % of the Gross Domestic Product, Infant mortality rate - %, CO2 emissions per capita and the working method was PCA.
In the context of regional development, PCA can be applied to extract relevant information about the economic, social or demographic variability of the 27 countries analyzed in the paper. Following the PCA analysis, it was observed that social development and inequalities cannot be assessed through variables belonging to a single sector. This method allowed the identification of variables (of countries) that have the highest weight describing economic, social, educational, and infrastructure aspects. Principal Component Analysis (PCA) was successfully applied to the set of socio-economic indicators. The first two principal components explain the variation in the data as follows, PC1 ~ 58% of the total variation and PC2 ~ 25% of the variation. Together, these two components cover approximately 83% of the total information, which is excellent for two-dimensional interpretation.
Keywords: Correlation matrix, development and social inequality, principal component analysis

76. The Use of Prebiotics in the Diet of Cyprinids: From Production Performance to Host Health

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Abstract:
Cyprinids are among the most important freshwater fish species farmed in Romanian aquaculture, and interest in nutritional strategies capable of supporting both production performance and host health has grown considerably in recent years. In this context, prebiotics are increasingly being included in fish feed due to their reported beneficial effects on the gut microbiota, feed utilization, and the body's physiological response. This paper summarizes the available data on the applications of prebiotics in cyprinid farming, with a focus on species of interest for aquaculture, particularly the common carp (Cyprinus carpio). Both commonly used prebiotics, such as mannan-oligosaccharides (MOS), fructo-oligosaccharides (FOS), galacto-oligosaccharides (GOS), inulin, and β-glucans, as well as other more recently evaluated compounds, are analyzed. Studies published to date show that prebiotic supplementation can contribute to improved growth, feed conversion, intestinal morphology, microbiota balance, immune response, antioxidant status, and resistance to pathogens. However, the observed effects are not consistent across all studies but vary depending on the type of prebiotic, the level of inclusion in the diet, the duration of administration, the species and age of the fish, as well as the rearing conditions. Overall, prebiotics represent an option of growing interest in cyprinid farming, but their effectiveness must be assessed in relation to the biological and technological context in which they are used.

Keywords: Aquaculture, *Cyprinus carpio*, microbiome, immunomodulator, oligosaccharides

77. Preliminary aspects regarding the diversity of cicada (Auchenorrhyncha) species in Romania

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Abstract:
Auchenorrhyncha group which includes species called leafhoppers and planthoppers that have a special role as components of insect biodiversity in agricultural ecosystems in Romania. From the point of view of the principles of

systemic ecology, these elements of the insect community within agricultural ecosystems are of interest in two important directions in the trophodynamic module of which they are part: one of them has economic importance for host crops (direct attacks and damages or vector agents) and the second as important sources of energy (food for other predatory species or participants in mineral decomposition processes). However, the group has not been studied in our country to know the composition of the species (total biodiversity) but only to reveal the role of a species within a specific crop or new foreign species considered invasive for some crops. Only one study has approached this subject from a systematic and diversity point of view but this too is limited to a certain geographical area (Popa & Cojocneanu, 2000). This work is a first attempt to highlight the species of this important group in the communities where they exist, across the country, which host plants or how many generations they develop annually. The study was carried out during 2023-2025 and resulted in the identification of a number of 143 species of Homoptera from 11 families. The species *Graphocephala fennahi* Young, 1977, is a new species for our country.

Keywords: Auchenorrhyncha, species, biodiversity

78. Behaviour of Quail Meat during Thermal Processing and Technological Implications: A Review

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Abstract:
Quail meat (Coturnix coturnix japonica) is a valuable source of animal protein, with nutritional properties superior to other poultry species, including a high content of polyunsaturated fatty acids, essential amino acids, and micronutrients. Despite a steady increase in global quail production, the behaviour of this species' meat during thermal processing remains poorly documented in the scientific literature, which motivates the present review. This paper synthesises the available data on the physicochemical, structural, and sensory changes induced in quail meat by the main cooking methods boiling, frying, roasting, grilling, and sous-vide with emphasis on three key aspects: cooking losses and water-holding capacity, reported in the literature in the range of 10.0–34.2% depending on the method and temperature applied; texture modifications resulting from the denaturation of myofibrillar proteins (myosin and actin) and the solubilisation of collagen; and the formation of volatile compounds through the Maillard reaction and lipid oxidation, with direct implications for the sensory profile of the final product. The literature analysis indicates that, at internal temperatures of 70–75°C, quail meat reaches optimal food safety parameters while maintaining moderate cooking losses and acceptable sensory texture. High-temperature, short-time methods (grilling, frying) promote the Maillard reaction and the generation of characteristic aroma compounds, whereas low-temperature, long-time methods (sous-vide) minimise cooking losses and improve tenderness. The paper highlights the need for dedicated experimental research on this species to optimise thermal processing parameters for both technological and gastronomic applications.

Keywords: quail meat, thermal processing, cooking loss, texture, Maillard reaction, volatile compounds

79. Study of Frequency of Scrapie Resistant Genotypes in Țurcană Breed

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Abstract:
Transmissible spongiform encephalopathies are caused by prions, which are pathological isoforms of normal proteins encoded by host organisms. The tests were performed on Țurcană breed sheep from a private farm in Sibiu County. Blood samples were taken from adult sheep and lambs born in 2021, and the next batch of samples was collected from 3-4-month-old lambs born in 2022. Blood samples were collected from the jugular vein, on EDTA, in a quantity of 6 ml/animal, and refrigerated at 4°C for transport to the laboratory. The analysis was performed in the molecular genetics laboratory of DSVSA Sibiu and at the National Reference Laboratory for Animal Health and Diagnosis in Bucharest. Sheep are classified into five classes of scrapie resistance: highly resistant, resistant, low resistance, susceptible, and highly susceptible. In 2021, resistant lambs accounted for half of the tested population. Among adults, 57.07% were resistant to the disease, 32.59% were in the low resistance group, and 10.34% were susceptible and highly susceptible. In 2022, 50.77% of lambs tested for scrapie were included into the resistant groups and 49.23% into the low resistance, susceptible, and highly susceptible groups. For breeding, only resistant sheep from the first two groups should be used and only in exceptional cases, sheep with low resistance from the third group. We recommend testing for scrapie resistance at the first sign of the disease, selecting sheep according to genotype, and purchasing rams that have been tested and found to be highly resistant for breeding purposes.
Keywords: title small ruminants, spongiform encephalopathy

80. Salmon Belly Flaps Processing Towards Sustainable By-Product Valorisation

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Abstract:
In the current context of circular economy principles and the need to reduce food waste, the comprehensive valorisation of by-products generated during fish processing represents a strategic priority for the food industry. This study investigates the potential utilization of salmon belly flaps, by-products obtained after filleting, through their conversion into raw meat, thermally processed meat, and fish oil, with subsequent applications in food product development. It evaluated the technological yields associated with these fractions, supported by descriptive statistical analyses. The results indicated a raw meat yield (%) of 56.16 ± 2.413 relative to the initial belly flap mass, a thermally processed meat yield (%) of 46.51 ± 1.506 relative to raw meat, and an oil yield (%) of 13.83 ± 0.841. When expressed relative to the initial raw material, the overall yields (%) were 26.04 ± 1.070 for thermally processed meat and 7.78 ± 0,608 for oil. Additionally, waste and technological losses were quantified, highlighting

the effect of processing stages on overall efficiency. The results demonstrate that salmon belly flaps represent an underutilized resource with potential for valorisation through appropriate processing technologies. The integration of secondary streams into the production chain can contribute to improved sustainability, yield optimization, and waste reduction in the fish processing industry.

Keywords: meat and oil yields, raw salmon meat, salmon oil, technological losses, thermally processed salmon meat, waste.

81. The inulin functionality as a prebiotic used in heat stress conditions in broilers' diet on growth performance, intestinal microbiota, blood parameters and intestinal histomorphometry

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Abstract

A possible alternative source to antibiotics could be the utilization of specific probiotics and prebiotics, such as inulin. In this study, we conducted a 42-day experimental study on 75 one-day-old ROSS 308 broiler chickens, divided into 3 groups (CON_{NTC}, CON_{HTS}, INL_{HST}), 25 per group, housed in an experimental hall with controlled environmental condition, according to the guide ROSS 308, on permanent litter rearing system.

During the starter phase (days 1–10), all chickens received a conventional basal diet under normal temperature conditions. In grower and finisher phases, the broilers were allocated as follows: CON_{NTC} (standard diet under normal temperature); CON_{HST} (standard diet under heat stress conditions 35°C) and INL_{HST} (1% inulin diet supplemetation under heat stress conditions 35°C). There were significant differences in body weight between groups, the CON_{HST} group registered a significant decrease (p=0,045) compared to CON_{NTC} group and INL_{HST} group registered a increase compared to CON_{HST}. Also, the weight of the gizzard was significantly (p=0,001) reduced in the CON_{HST} group. An significant increase in *Lactobacillus sp.* population (p=0,038) and a significant decrease in *Enterobacteriaceae sp*. and *Staphylococcus sp*. (p=0,004; p=0,005) were observed in INL_{HST} group, compared to CON_{NTC} and CON_{HST}. Concerning the hematological and biochemical profile, a significant increase in heterophils was observed in the CON_{HST} group (p<0,001) compared to CON_{NTS} and INL_{HST} groups; serum protein (p=0,013) and total protein (p=0,013) levels increased CON_{HTS} si INL_{HTS} compared to CON_{NTS}. The intestinal histomorphometry evaluation of villi width recorded a significant increase (p=0,003) in the INL_{HST} group compared to CON_{HST} group. In conclusion, 1% inulin, as a prebiotic fiber, administered in the diet of broilers are significantly increased beneficial bacterial populations in the intestinal microflora, without influencing growth performance, blood parameters and histomorphometry of villi and crypts in the broiler's duodenum.

Keywords: antibiotics, alternative source, inulin, nutrition, poultry, prebiotics

82. Study on the Potential use of Tomatoes and their By-Products in Poultry Nutrition

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Abstract:
The expansion of the agri-food industry has led to the generation of large quantities of plant residues, which are often underutilized despite being rich in nutrients and bioactive compounds. This study examines the potential valorization of tomatoes processing by-products (particularly pomace, peels, and seeds) in poultry nutrition, within the framework of the circular economy and environmental impact reduction. The integration of these by-products into animal feed is also supported at the international level by organizations such as the Food and Agriculture Organization, as a strategy to enhance the sustainability of livestock production systems. Tomato by-products exhibit high nutritional value, being characterized by significant contents of proteins (15–33%), crude fiber (25–50%), lipids (5–20%), and essential minerals (K, Ca, Mg, Fe). Seeds and peels represent important sources of polyunsaturated fatty acids, particularly linoleic and α-linolenic acids, as well as bioactive compounds such as carotenoids (lycopene, β-carotene, lutein), polyphenols, tocopherols, and phytosterols, which possess antioxidant and functional properties. Their composition is influenced by tomato variety, degree of ripeness, and processing technology. In laying hens nutrition, including tomato by-products at low to moderate levels (5–15%) has no effects on performances, while leading to improved yolk color due to carotenoid content; oxidative stability of eggs; and, in some cases, reduced serum and yolk cholesterol levels. However, high inclusion levels may reduce feed intake and egg mass, due to fiber and lower energy density of the diet. In broiler nutrition, low to moderate inclusion levels (up to 8–10%) can be used without major adverse effects, and under certain conditions (e.g., heat stress), tomato by-products may improve antioxidant status and immune response. In contrast, high inclusion levels (≥15–20%) are often associated with decreased growth performance and feed conversion efficiency, due to increased fiber intake and reduced digestibility. Fermentation processes or supplementation with exogenous digestive enzymes may partially mitigate these limitations. In conclusion, tomatoes industry by-products represent valuable alternative feed ingredients with significant economic, nutritional, and ecological potential, when used in poultry nutrition.

Keywords: egg quality; meat quality; bioactive compounds; laying hens; broiler chickens.

Acknowledgements
This research was funded by the Ministry of Investments and European Projects (MIPE), PoCIDIF project - Innovative nutritional strategies for obtaining competitive animal products enriched in bioactive compounds favorable to consumer health (PREM-ALIM), acronim: PREM-ALIM, cod SMYS: 336320; Contract no: 390100/27.11.2025

83. Modulation Chromatic Parameters of the Broiler Carcass Using Natural Carotenoids

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Abstract:
The color of the skin and muscle tissue are essential quality indicators in the consumer's perception, golden-yellow or slightly reddish shades being associated with a healthy product and an extensive growth system. The present study investigates the potential of substituting synthetic pigments with natural feed additives rich in carotenoids, namely red pepper powder (*Capsicum annuum*) and sea buckthorn (*Hippophae rhamnoides*), to improve the color profile of ROSS 308 broilers. The evaluation of the influence of dietary supplementation in percentages of 2% and 3% was carried out by the CIELAB colorimetric system, the results highlighting a significant differentiation of the parameters depending on the dose and the source used. The administration of 3% red pepper powder determined the intensification of the red index (a∗=14.42) and the color saturation (Chroma, C∗=20.76), simultaneously with a decrease in brightness (L∗). In contrast, the inclusion of 3% sea buckthorn powder favored the deposition of yellow pigments, recording the highest values of parameter b∗ (17.06) and maintaining a bright appearance of the carcass. All experimental groups showed a chromatic intensity higher than the control group. The conclusions of the study demonstrate that red pepper powder is optimal for intense pigmentation, while sea buckthorn gives a natural golden appearance, both of which are viable solutions for increasing the visual quality and antioxidant value of poultry meat.

Keywords: broiler, carotenoids, peppers, sea buckthorn, CIELAB

84. Using Fuzzy Cognitive Maps (FCM) as a Predictive Tool in Wetland Restoration: Scenarios for the Danube Delta

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Abstract:
Wetlands are essential ecosystems for maintaining ecological balance, providing critical ecosystem services such as water purification, flood regulation, carbon storage, and biodiversity support. However, anthropogenic activities frequently lead to their degradation, biodiversity loss, and the erosion of ecosystem services. Consequently, the restoration of these ecosystems has become a global priority, further emphasized by the UN Decade on Ecosystem Restoration (2021–2030).
This study employs **Fuzzy Cognitive Mapping (FCM)** as a participatory modelling and predictive tool for wetland restoration in the Danube Delta. Over 20 stakeholders—representing administration, academia, fisheries, and other local sectors—were involved in identifying major pressures, relevant ecosystem services, and potential intervention measures. Their collective knowledge was structured into fuzzy cognitive models, allowing for the simulation of three future scenarios corresponding to different levels of intervention and management.

The results indicate that in the "worst-case" scenario, most parameters show negative trends, reflecting accelerated ecosystem degradation and the loss of fundamental services, such as drinking water and fishery resources. In contrast, intermediate and optimistic scenarios highlight significant improvements in biodiversity conservation, water quality, tourism, and local economic activities. These findings demonstrate the potential of the FCM method to integrate scientific and local knowledge, providing a robust foundation for decision-making and adaptive planning in aquatic ecosystem restoration.

Keywords: ecological restoration, wetlands, Fuzzy Cognitive Maps, participatory modeling, ecosystem services, Danube Delta

85. Estimation of Breeding Value for Ultrasound Traits on *Longissimus Dorsi* in Black Head Teleorman

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Abstract:
The aim of the present research was to estimate the breeding values for ultrasound measurement characteristics in Black Head Teleorman sheep using serf-performance for selection. Biological material was consisted from 67 lambs on weaning period at 102.49 days. Ultrasound measurements were conducted on *Longissimus Dorsi* muscle, a very good indicator for meat quality. Body weight was 30.95 kg. Ultrasound parameters were measured in two points (3rdand 4th lumbar vertebrae and at 12 rib). The statistics obtained for ultrasound characteristics subcutaneous back fat (2.39; 2.44 mm), muscle depth (22.31; 21.44 mm), eye muscle area (9.00; 8.86 cm^2) and muscle perimeter (124.54; 123.89 mm). The breeding value for body weight at weaning day was ranged between -4.42 and 5.20. The breeding values for ultrasound characteristics obtained for subcutaneous back fat thickness ranged between -0.28 and 0.45; muscle depth -2.18 and 2.87; eye muscle area -0.77 and 1.19; muscle perimeter -6.89 and 6.12. The relative breeding value could be a very good classification for lambs in to the selection process to make a better evaluation and to continue the breeding with the best individuals for the ultrasound traits with economic importance in meat quality market.

Keywords: breeding value, ultrasound, muscle depth, eye muscle, sheep meat

86. Nutritional Quality Assessment of Alfalfa (*Medicago sativa* L.) Genotypes Developed for Improved Stress Resilience

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Abstract:
Alfalfa (*Medicago sativa* L.) is a key forage crop characterized by high productivity, rapid regrowth capacity, and superior nutritional value, making it essential for sustainable livestock production systems. This study aimed to evaluate the nutritional quality of several alfalfa genotypes developed for resistance and tolerance to drought, heat stress, and diseases, with particular relevance to their use in animal nutrition, supporting optimal livestock performance. A total of 69 samples originating from multiple experimental plots and harvest cycles were analyzed. Standardized analytical methods were employed to determine dry matter, crude protein, crude fat, crude fiber, ash, and fiber fractions (neutral detergent fiber – NDF and acid detergent fiber – ADF). The nutritive value was further assessed through indicators such as relative feed value (RFV) and total digestible nutrients (TDN). Results indicated that dry matter content remained relatively constant (~93%) across all samples, reflecting uniform processing conditions. Crude protein content varied significantly depending on harvest stage, with the highest values recorded in early cuts (up to 26.16%) and in the second cut of certain plots (up to 24.61%). In contrast, fiber fractions (NDF and ADF) showed an inverse relationship with protein content, with higher values observed in later maturity stages, negatively influencing digestibility. Notably, samples from the second harvest of experimental plot 3 exhibited the most favorable nutritional profile, combining high protein levels with reduced fiber content, thus enhancing digestibility and overall feed value. Variability among genotypes highlights the importance of selection and harvest timing in optimizing forage quality. These findings emphasize the potential of improved alfalfa genotypes to enhance feed efficiency and animal performance, supporting their role in modern animal nutrition and sustainable agricultural systems.

Keywords: forage evaluation, nutritive value, crude protein, fiber fractions, relative feed value, total digestible nutrients

Acknowledgments: This research was funded by the Ministry of Agriculture and Rural Development (Romania), Project ADER 1.1.7./2023.

87. Alternative Feed Sources in Response to Climate Change and Their Impact on Milk Production in Dairy Cows

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Abstract:
Climate change and the increasing frequency of droughts over recent decades have significantly affected the availability of traditional forage crops in Central and Eastern Europe, leading to higher production costs and reduced profitability of dairy farms. In this context, the volatility of imported raw material prices and the instability of conventional forage supply make it necessary to diversify feeding sources by exploiting alternative ingredients with local availability and demonstrated nutritional value. This review critically analyses the nutritional potential of milk thistle (*Silybum marianum*) cake, pumpkin seed (*Cucurbita pepo L.)* cake and linseed (*Linum usitatissimum*) meal, evaluating their effects on milk production and composition, dry matter intake and digestibility in dairy cows, as well as the economic implications of their integration into rations. Milk thistle cake is distinguished by its silymarin content, a flavonolignan complex with hepatoprotective and antioxidant properties, with favourable effects on peripartum metabolic health and the improvement of milk composition. Pumpkin seed cake, rich in crude protein and unsaturated fatty acids, can completely replace soybean meal without negatively affecting productive performance, while also contributing to the improvement of the antioxidant status of animals. Linseed meal exerts the strongest documented effects on the lipid profile of milk, significantly enriching the omega-3 fatty acid and conjugated linoleic acid fractions, with direct benefits for the nutritional value of milk and animal health. The integration of these agro-industrial by-products into dairy cow rations reduces dependence on volatile imported protein markets, valorises local resources within a circular economy framework and stabilises feed costs. The synthesis of available literature confirms the genuine nutritional and economic potential of these alternative sources, recommending them as viable solutions for milk production systems adapted to current climate challenges.

Keywords: dairy cows, alternative feed, milk thistle cake, pumpkin seed cake, linseed cake, oilseed by-products

88. Morphocytometric analysis of phagocytic cells in the hemolymph of clinically healthy adult bees exposed to non-ionizing electromagnetic radiation compared with a control group

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Abstract:
The aim of the study was to evaluate the effects of non-ionizing electromagnetic fields on immune status by analyzing morphocytometric changes in phagocytic cells from the hemolymph of bees involved in the cellular immune response. The analysis was correlated with the distribution of electromagnetic power density and the distance from the emission source. The results revealed significant variations in radiation power density as a function of distance, with maximum values recorded at intermediate distances, particularly around 300 m, where both elevated levels and increased variability were observed. The hemolymph analysis of nurse bees (7–45 days old) originating from apiaries located in proximity to sources of non-ionizing electromagnetic radiation showed a significant decrease in the proportion of all types of phagocytic cells (10% granulocytes, 2% macrocites, 13% microcytes, 29% plasmocytes, 1% spindle-shaped cells, 44% other types of hemocytes). The reduction in the proportion of phagocytic cells observed in bees exposed to non-ionizing electromagnetic radiation may be associated with alterations in cellular immune mechanisms, suggesting a potential effect of electromagnetic stress. The results of the statistical analysis revealed significant differences between the experimental and control groups, consisting of a significant reduction in the percentage of granulocytes, microcytes, and plasmocytes in the experimental group ($p < 0.0001$) compared to the control group.

Keywords: *Apis mellifera*, electromagnetic field exposure (EMF), hemocytes, phagocytic cells

89. Hemp Seeds, Meal, and Oil as Potential Functional Ingredients in Poultry Diets

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Abstract:
Hemp (*Cannabis sativa* L.) products, including seeds, meal, and oil, show promising potential as functional ingredients in poultry nutrition due to their rich chemical composition and favorable fatty acid profile. Hemp seeds contain high levels of crude fat (27.16%) and moderate protein (22.76%), while hemp meal is characterized by a higher protein content (27.23%) and lower fat (10.19%), making it a valuable protein source in feed formulations. Both products also provide significant amounts of crude fiber and essential minerals. Hemp meal, in particular, is richer in iron (195.15 mg/kg), manganese (125.87 mg/kg), and zinc (73.16 mg/kg) compared to seeds, contributing to improved micronutrient intake in birds. Hemp oil is notable for its high polyunsaturated fatty acid (PUFA) content (72.22%), with a balanced omega-6 to omega-3 ratio (3.5), which is considered optimal for animal health. Similar favorable fatty acid profiles are observed in hemp seeds and meal. These characteristics may support improved immune function, better growth performance, and enhanced quality of poultry products, particularly in terms of lipid composition. Oxidative stability of hemp oil, evaluated through peroxide value (PV), shows a gradual increase over time (from 1.097 to 1.591 meq O_2/kg), indicating moderate susceptibility to oxidation but still within acceptable limits for feed use when properly stored.
It can be concluded that hemp-derived products can serve as sustainable and nutritious alternatives in poultry diets, offering a combination of high-quality protein, essential fatty acids, and minerals. Their inclusion may enhance both animal health and the nutritional value of poultry products, although further research is recommended to optimize inclusion levels.

Keywords: hemp; seed meal; poultry feed; by-products; nutrients; sustainability.

Acknowledgements
This research was conducted with the support of Ministry of Agriculture and Rural Development, Project ADER 16.1.1./2024 „Research on the potential for superior utilization of the Cannabis sativa species for food purposes"

90. Influence of Housing Systems on Egg Microbial Load: Evaluation of Total Viable Count on Shell and in Albumen

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Abstract:
Eggs represent a valuable source of nutrients, widely consumed worldwide, but their microbiological quality is influenced by various production, environmental, and handling factors. This study aimed to evaluate the microbiological quality of eggs obtained from different housing systems by determining the total viable count (TVC) on the eggshell surface and in the albumen. The experiment was conducted over a 24-week period in two locations from Constanţa County, Romania, including four rearing systems: organic (O), free-range (FR), intensive on litter (IS), and intensive in cages (IB). A total of 96 eggs (n = 24/system) were collected and analyzed under controlled conditions.
The results showed significant differences ($p < 0.001$) in eggshell microbial load between systems, with the highest mean values recorded in the organic system (5.223 log CFU/eggshell), followed by free-range (5.105 log CFU/eggshell), while the lowest values were observed in intensive systems (4.735 log CFU/eggshell for IS and 4.603 log CFU/eggshell for IB). These findings highlight the influence of environmental exposure and hygiene conditions on the microbial contamination of the eggshell surface.
In contrast, the total viable count in albumen was very low across all systems, with mean values ranging from 0.276 to 0.390 log CFU/g, and no statistically significant differences were observed between rearing systems ($p > 0.05$). The results indicate that, despite variations in external contamination, the internal egg content remains largely unaffected, suggesting an effective protective role of the eggshell and associated membranes.

Keywords: egg microbiological quality; eggshell contamination; free-range; intensive systems; organic system; total viable count.

91. Management of the Laminitic Horse – an Overview

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Abstract:
Laminitis in horses is a complex condition requiring a comprehensive understanding of its causes, symptoms and treatment strategies, that are not really in a large range. Diet plays a crucial role in laminitis prevention. High-sugar feeds can exacerbate insulin resistance, making dietary management essential for at-risk horses. Owners should focus on providing a balanced diet low in non-structural carbohydrates. Diagnosing laminitis involves clinical evaluation and severity scoring. The modified Obel method is a standardized approach that helps veterinarians assess the severity of the condition effectively. Radiographic assessments are also critical, allowing for the evaluation of structural changes in

the hoof, such as rotation or sinking of the coffin bone. Treatment options for laminitis are multifaceted: medication, targeted low exercise, strict diet, orthopedic shoes, specific supplements. Continuous digital hypothermia has emerged as a promising method for managing inflammation and improving blood flow to the hoof. Additionally, acupuncture and laser have been explored as a complementary therapy, showing potential benefits in pain management. Preventive measures are equally important. Horse owners are encouraged to monitor their animals closely, particularly during seasonal changes when laminitis risk may increase. Regular veterinary check-ups can help identify early signs of endocrine disorders. By focusing on prevention and early intervention, horse owners can significantly improve outcomes for affected animals. Ongoing research continues to enhance our understanding, paving the way for better management practices.

Keywords: laminita, insulin resistance, horse dietary management

92. Cardiovascular Evaluation in Sport Horses by Electrocardiography, Blood Pressure and Cardiac Troponin T

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Abstract:
The continuous development of equestrian sports in Romania has increased interest in the medical monitoring of horses involved in competitive activities. In this context, the warmblood population represents one of the main genetic resources used in show jumping and other equestrian disciplines. Repeated physical exertion induces physiological cardiovascular adaptations; however, in certain individuals it may also promote transient functional disturbances or processes of myocardial overload. The present study aimed to provide an integrated evaluation of the cardiovascular response to exercise through electrocardiography, arterial blood pressure assessment, and cardiac troponin T measurement. Six adult sport horse individuals were examined at rest, immediately after a standardized warm-up protocol, and after 10 minutes of recovery. The results revealed post-exercise sinus tachycardia, variable heart rate recovery, marked increases in systolic blood pressure, and mild changes in the amplitude of electrocardiographic complexes. Cardiac troponin T increased from 2.818 pg/mL before exercise to 3.062 pg/mL after exercise, without statistical significance ($p > 0.05$). The findings confirm the value of integrated cardiovascular monitoring in the medical management of sport horses, both for optimizing training programs and for the early detection of cardiac overload.
Keywords: warmblood horse, equine cardiology, exercise training management

93. Influence of Climatic Factors on the Composition and Production of Apilarnil from the Southern Area of Romania

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Abstract:
Apilarnil, a nutrient-rich apicultural product derived from drone larvae, is valued for its high content of proteins, lipids, and bioactive compounds. Its composition is strongly influenced by environmental factors, particularly climatic conditions such as temperature, humidity, and floral availability, which affect both bee development and hive productivity.
This study evaluates the impact of climatic variability on the composition of apilarnil collected from four regions in southern Romania (Caraș, Ilfov, Giurgiu, and Tulcea). Moisture, lipid, protein, and ash content were analyzed, revealing significant regional differences. Samples from warmer and drier areas showed lower moisture and higher lipid content, while those from more humid regions exhibited increased moisture and moderate variations in protein levels. Differences in ash content indicated variability in mineral composition influenced by environmental conditions. FT-IR spectroscopy confirmed the presence of proteins, lipids, and carbohydrates.
These results highlight the significant influence of climatic factors on both the composition and production of apilarnil, emphasizing the need to consider current climate change trends in the sustainable management and valorization of apicultural products.

Keywords: bee drone larvae, environmental conditions, FT-IR spectroscopy, physicochemical properties, sustainable apiculture.

94. Study on circadian behaviour of dairy cows in a voluntary milking system

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Abstract:
The aim of the study was to link the circadian behaviour of cows with the daily milk production and number of milkings in a voluntary milking system. The study was carried out in a private dairy farm from Timiș County having 38 Holstein-Friesian milking cows. Data was collected during January and February 2025 on circadian activity of 10 randomly selected cows. A total of 590 recordings were analysed regarding the daily activity length, resting periods and length, rumination periods and length, feeding periods and length, daily milk yield, and daily number of milkings.

Average duration of resting, ruminating and feed consumption was calculated. All the results were expressed in minutes. Pearson phenotypic correlation was determined among cow behaviour components. Also, the effect of cow, as well as the effect of milking number on daily cow behaviour was assessed. All inferences were conducted in STATISTICA software. Average daily milk production was 30.34±0.17kg in 3.6 milkings. Daily activity of cows was 5 hours and 3 min (303.10±2.34 min), while daily resting lasted 13 hours and 9 min (789.26±3.11 min) distributed in 6.01 periods with an average length of 2 hours and 15 min (135.30±1.15 min). Total daily rumination time was 9 hours and 40 min (580.41±2.26 min) distributed over 6.45 periods with an average length of 1 hour and 34 min (94.25±0.97 min). On average, cows spent 5 hours and 48 min per day feeding (347.64±3.24 min) in 4.29 periods of 1 hour and 24 min (84.05±1.01 min). Cows visited the milking robot for 2 to 5 times per day. Number of robot visits had a significant effect on cow behaviour ($p<0.01$). Thus, cows with lower number of milkings spent more time for the daily activity and feeding while less time for resting and rumination. For instance, in cows with 2 milking/day the daily activity was 4 hours and 44 min, consumption was 5 hours and 11 minutes, resting time was 14 hours and 15 min, and rumination time was 10 hours and 8 min. In the same time, cows with 5 milkings/day were active for 5 hours and 15 min, consumed the feed for 6 hours and 5 min, spent 12 hours and 40 min for resting, and 9 hours and 46 min for rumination. Daily milk yield was positively and moderately correlated with number of milkings, feed consumption and rumination time (0.22, 0.31, and 0.39, respectively), while was negatively and poorly correlated with activity and resting duration (-0.29 and -0.11, respectively). Number of daily milkings was positively and poorly correlated with consumption and rumination time (0.20 and 0.18, respectively), while was not correlated with the resting time. It was concluded that there is a strong relationship between cow behaviour on one side and daily milk yield and milkings on the other side.

Keywords: behaviour, cow, daily milk, milkings, VMS

95. Research on the Evolution of Crop Production in Teleorman County

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Abstract:
This paper analyzes the evolution of crop production in Teleorman County, highlighting the main trends regarding cultivated areas, yields, and crop productivity levels. The study is based on official statistical data and examines a period relevant from an agricultural perspective, with the aim of identifying the dynamics of the crop sector and the factors influencing its performance. The results highlight that Teleorman County has high agricultural potential due to favorable natural conditions, particularly fertile soils and flat terrain, which support the cultivation of staple crops such as wheat, barley, corn, and sunflowers. The evolution of crop production has fluctuated from year to year, driven primarily by climatic conditions but also by the technological level of agricultural holdings. Productivity analysis reveals a general upward trend during certain periods, indicating an improvement in agricultural practices and the use of modern inputs. However, climatic variability, particularly drought, remains a major limiting factor,

negatively affecting the stability of crop yields. In conclusion, crop production is an essential pillar of Teleorman County's economy, playing a significant role in rural development. To effectively harness existing potential, measures must be adopted to modernize agriculture, expand irrigation systems, and increase resilience to climate change.

Keywords: crop production; Teleorman; agricultural crops; cultivated area; agriculture

96. The Development of Agritourism in Vâlcea County in the Context of Sustainable Development

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Abstract:
This paper analyzes the evolution of agritourism in Vâlcea County, highlighting the fact that this sector has experienced significant growth during the period under review, driven by the area's exceptional natural and cultural potential, as well as by the diversification of tourism infrastructure. The increase in the number of tourist accommodation facilities, in accommodation capacity, and in tourist arrivals reflects the consolidation of rural tourism and agritourism as activities complementary to the local economy. In this context, the paper addresses agritourism as an essential factor in sustainable development, analyzing its role in revitalizing the rural environment and in capitalizing on local resources. The methodology used includes documentary analysis, statistical data analysis, and SWOT analysis, with the aim of highlighting the main trends and existing limitations. The results obtained underscore the importance of the domestic market in supporting agritourism, as well as the need to diversify it by attracting foreign tourists. In this context, strategic directions focused on modernization, digitization, and effective promotion are proposed, intended to contribute to increasing the sector's competitiveness. It is emphasized that agritourism can become an important pillar of sustainable development through its economic, social, and cultural impact on rural communities.

Keywords: agritourism, sustainable development, tourists, Vâlcea County, strategy

97. Post emergence control of *Ambrosia artemisiifolia* and associated weeds on wheat stubble using selected herbicidal active substances

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Abstract:
Ambrosia artemisiifolia L. is one of the most problematic invasive weed species in Europe due to its high competitiveness, prolific seed production, and negative effects on both agriculture and public health. Its control is particularly important on wheat stubble, where surviving plants may replenish the soil seed bank and increase infestation pressure in subsequent crops. This study evaluated the post-emergence efficacy of selected herbicidal active substances, with particular emphasis on halauxifen-methyl applied alone and in mixtures, against A. artemisiifolia and associated broadleaf weeds under field conditions in western Romania. Seven herbicide treatments and an untreated control were tested, and weed control was visually assessed at 21 and 42 days after application. Halauxifen-methyl applied alone showed moderate efficacy, with mean control values of 67.5% and 72.9%, whereas mixtures performed better, particularly fluroxypyr-meptyl + halauxifen-methyl + triclopyr-butoxyethyl, with 89.2% and 95.8%, and clopyralid + halauxifen-methyl, with 85.4% and 88.8%. Glyphosate-isopropylammonium provided the highest efficacy, reaching 97.5% and 100%. These findings indicate that halauxifen-methyl is more effective in mixtures than alone and support the use of herbicide combinations for more reliable and sustainable ragweed management on wheat stubble.

Keywords: Ambrosia artemisiifolia, wheat stubble, halauxifen-methyl, herbicide mixtures, weed control

98. Challenge-driven education for sustainable development: Integrating water quality and antimicrobial resistance monitoring in the Lower Danube Basin

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Abstract:
This study presents a challenge-driven learning model implemented in an international higher education program within the European University Alliance CIVIS, "*Environmental challenges Facing the Danube River*". Students from different disciplinary backgrounds were engaged in authentic research projects addressing water quality and public

health risks. To stimulate a deep student involvement in raising awareness and addressing environmental problems, they worked in interdisciplinary teams and were involved in activities including: (i) literature review and discussions with local stakeholders, (ii) water sampling, (iii) chemical and microbiological analysis of water samples, (iii) analysis and interpretation of data, and (iv) oral presentation and written report based on the obtained results.
The main results are based on chemical and microbiological monitoring of the Danube River in the region of Orșova City, Romania, conducted over a three-year period (2023–2025) as a core case study. To assess the ecological status of the water and the impact of anthropogenic activities, measurements of general physicochemical parameters (e.g. pH, conductivity, dissolved oxygen) were complemented by the quantification of organic load (chemical and biochemical oxygen demand and total organic carbon) and selected emerging pollutants (e.g. sulfamethoxazole, trimethoprim, ofloxacin, and clindamycin). The microbiological profile was assessed through quantification of heterotrophic bacteria, *Escherichia coli*, and antibiotic-resistant E. *coli* as indicators of fecal pollution and antimicrobial resistance. Results from all three campaigns revealed spatial variability in chemical and microbial parameters, with elevated organic pollutant concentrations and heterotrophic bacterial loads in areas impacted by wastewater treatment plant effluents or untreated wastewater discharges. The findings demonstrate that integrating applied research into a sustainable-development-oriented curriculum effectively links scientific inquiry with sustainability and One Health perspectives, offering a scalable model for embedding societal relevance into STEM education.

Acknowledgment: Funding from ERASMUS+ within the project: CIVIS-Europe's Civic University Alliance and from Romanian National Research Authority within the project: DANUBIUS-RO-2

Keywords: international higher-education program, sustainable development, river ecological status

99. Strategies Based on Antimicrobial Peptides for Combating Bacterial Resistance

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Abstract:
Bacterial resistance to antibiotics is a major threat to global public health. It limits the effectiveness of conventional treatments and increases the risk of complications and mortality. In this context, antimicrobial peptides (AMPs) have emerged as a promising alternative due to their rapid and complex mechanisms of action. This article analyzes the main strategies based on the use of antimicrobial peptides to combat bacterial resistance, drawing on data from the scientific literature. The mechanisms through which these peptides act are highlighted, particularly their ability to destabilize bacterial cell membranes and modulate the host immune response. Furthermore, the paper addresses modern development approaches, including the design of optimized synthetic peptides, the use of nanostructured delivery systems, and the combination of antimicrobial peptides with conventional antibiotics to achieve synergistic effects. These strategies enhance therapeutic efficiency and reduce the risk of resistance development. In conclusion,

antimicrobial peptide-based strategies represent an innovative and promising direction in the fight against bacterial resistance.

Keywords: Antimicrobial peptides (AMPs), Bacterial resistance, Peptide-based strategies, Antibacterial mechanisms

100. Optimizing Sunflower Productivity Through Combined Organic Amendments: A Sustainable Alternative to Mineral Fertilization in Tropical Soil

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Abstract:
Tropical soils often suffer from rapid organic matter depletion and declining fertility, leading many farmers to rely heavily on mineral fertilizers. While effective in the short term, these inputs are costly, environmentally damaging, and increasingly unsustainable. This study evaluated whether combining two locally available organic amendments. Cow dung compost and plantain peel biochar where used and this could offer a more sustainable pathway to improve sunflower (*Helianthus annuus*) productivity in a tropical savanna soil in Dang, Ngaoundere, Cameroon. A randomized complete block design with nine treatments (Control, T+ : NPK at a rate of 20 g, T1 : 500 g of Compost, T2 : biochar derived from banana peel at a rate of 10 g per pot, T3 : 20 g of biochar, T4 : 30 g of biochar, T5 : 500 g of compost and 10 g of biochar, T6 : 500 g of compost and 20 g of biochar, and T7 : 500 g of compost and 30 g of biochar. Soil, compost, and biochar were chemically characterized prior to application. Plant growth parameters (germination rate, height, leaf number, and leaf area), phenological traits (days to flowering), and yield components (seed weight and yield per hectare) were monitored. Both biochar and the local soil were alkaline, while the compost was slightly acidic and exceptionally rich in organic matter. The combined application of compost and biochar significantly enhanced vegetative growth, accelerated flowering, and improved overall productivity. The most promising treatment, 500 g of compost combined with 20 g of biochar per plant produced the highest seed yield (2.74 t/ha), markedly outperforming the control. These results demonstrate that combining cow dung compost and plantain peel biochar improves sunflower yield and soil health, offering a sustainable, low-cost alternative to mineral fertilizers for tropical smallholder farming systems.

Keywords: biochar, compost, sunflower, tropical soils, yield optimization

101. Peri-parturient weight in goat kids from the Banat mountainous area: a comparative farm-level analysis

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Abstract:
The present study examines the birth weight of goat kids originating from three farms located in the mountainous region of Banat, providing a comparative perspective on variations according to sex and farm unit. The results indicate that the highest average birth weights in male kids were recorded in Farm CC-1 (3.67 kg), closely followed by Farm CC-2 (3.65 kg), suggesting a high level of consistency between these farming conditions. In contrast, female kids displayed lower average values overall, with the highest mean observed in Farm CC-2 (2.69 kg). Statistical analysis revealed highly significant differences between sexes within each farm ($p < 0.0001$), confirming the strong influence of biological sex on birth weight. However, no statistically significant differences were identified between farms, indicating that management practices and environmental conditions are relatively uniform across the studied locations. These findings emphasize the importance of sex as a determining factor in birth weight, while also suggesting a consistent level of care and similar rearing conditions among the farms included in the study.
Keywords: goat, weight, parturition, Banat mountainous area

102. RESEARCH ON THE QUALITY OF MANCHURIAN ROE FROM COMMERCE

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Abstract:
Manchuria red roe are derived from the Oncorhynchus keta wild salmon species and belong to the by-products of these fish, bringing a great nutritional benefit to those who consume them. This type of eggs contains significant amounts of nutrients such as 30% protein, 30% easily assimilable fats, 10-13% lecithin, vitamins A, E,D, B complex, phosphorus, phosphorus, iron and other mineral substances, so a constant consumption of roe leads to reduced triglyceride levels and may help in the fight against depression, with arthritis or Alzheimer's disease. This research aimed at highlighting the most significant sensory characteristics, as well as physico-chemical and microbiological

parameters for the three assortments from commerce. As a result of the study, it was especially highlighted that in the case of all assortments the recorded protein content was below the level mentioned on the label, a fact for which we recommend a review of the labels of the three products.

Keywords: manchurian roe, protein variability, food safety

103. Sustainable Biotechnologies for Next-Generation Pest Management: A Review of Eco-Friendly Strategies

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Abstract:
The increasing environmental and health concerns associated with the intensive use of synthetic pesticides have accelerated the search for sustainable and eco-friendly alternatives in modern agriculture. This paperwork explores recent advances in biotechnological approaches for next-generation pest management, with a particular focus on minimally invasive and environmentally compatible strategies. Emphasis is placed on the use of natural compounds, including plant-derived extracts and signaling chemicals that interfere with insect behavior, communication, and reproduction. The paper synthesizes current knowledge on behavior-modulating technologies such as pheromone disruption, allelochemical-based interactions, and biologically active plant metabolites, highlighting their potential to reduce pest populations without adversely affecting non-target organisms or ecosystem balance. In addition, emerging integrative approaches combining biotechnology, chemical ecology, and precision agriculture are discussed as key drivers for the development of resilient and sustainable crop protection systems. To bridge the gap between theory and application, selected experimental studies are critically examined to demonstrate the practical effectiveness of these strategies under field conditions. These examples illustrate how targeted interference with pest reproductive mechanisms can contribute to crop protection while minimizing ecological impact. Overall, this review underscores the importance of transitioning toward biologically inspired pest management solutions and provides a comprehensive framework for future research and implementation in sustainable agriculture.

Keywords: eco-friendly agriculture, pest management, sustainable biotechnologies.

104. Selective removal of chlorinated impurities from (R)-Carvone using an industrial alkaline sulfite process

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Abstract:
Chlorinated impurities present in crude (R)-Carvone ($C_{10}H_{14}O$), [(R)-5-isopropenyl-2-methyl-2ciclohexen-1-one], resulted in chemical synthesis, represent a significant challenge for its utilization, as they may compromise product stability, safety and applicability in food, fragrance and pharmaceutical formulations. This study presents an industrial validated process for the selective removal of chlorinated compounds using an alkaline sulfite system under moderate reaction conditions. The method employs a biphasic mixture of sodium hydroxide (NaOH), sodium sulfite (Na_2SO_3), isopropanol (C_3H_8O) and controlled acetic acid ($C_2H_4O_2$) addition in a stirred reactor equipped with reflux and solvent recovery units, followed by solvent distillation and recycling steps. Process operates at temperatures between 60 and 90^0C and includes a closed loop recycling stage which improves reagent utilization and reduces waste generation. The proposed approached enables efficient conversion and removal of chlorinated terpene impurities while preserving the structural integrity of the target ketone. The integration of reaction and purification in a single industrial unit, combined with solvent recovery and neutralization stages, provides a scalable and economically attractive solution for the production of hi purity (R)-Carvone. This work demonstrates a practical and selective dichlorination strategy suitable for large scale terpene processing.
Keywords: terpene, ketones, limonene, carvone, dichlorination, impurities

105. Phytonutritional Composition and Antioxidant Properties of Some Fruit Tree Leaves for Potential Use in Monogastric Nutrition

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Abstract:
Fruit tree leaves are increasingly gaining attention in the context of the circular economy and the valorization of unconventional nutrient sources. Current research focuses on identifying valuable nutrient sources to supplement monogastric diets. Fig (*Ficus carica*) leaves and black mulberry (*Morus nigra*) leaves offer an alternative for this purpose. This study aimed to compare the chemical composition and antioxidant potential of these unconventional

materials for potential application in monogastric nutrition. The proximate composition, mineral content, total polyphenols, xanthophylls and tocopherols and antioxidant activity (DPPH method) were determined. The results indicated that fig leaves had significant concentrations of crude protein and ash, while black mulberry leaves were rich in crude fiber and fat. Additionally, black mulberry leaves contained twice the amount of iron and higher levels of tocopherols compared to fig leaves. Conversely, fig leaves were richer in xanthophylls than mulberry leaves. The analysis of the polyphenolic profile identified 19 different compounds, with 3-hydroxybenzoic acid and rutin being the dominant compounds in fig leaves (5.92 mg/g). In contrast, chlorogenic acid and ellagic acid were the most abundant in mulberry leaves (7.99 mg/g). The DPPH assay revealed that mulberry leaves had a higher antioxidant capacity through free radical scavenging compared to fig leaves. Overall, the results demonstrate that both fig and mulberry leaves are valuable sources of phytonutrients with strong antioxidant activity, making them suitable for use in monogastric nutrition.

Keywords: fig, mulberry, leaves, unconventional sources, nutrients.

Acknowledgements
This work was supported by a grant of the Ministry of Education and Research, CNCS – UEFISCDI, Project OXICAP, Grant number 11TE/2025, within PNCDI IV.

106. Nutritional benefits and importance of bioactive substances in European Hake (*Merluccius merluccius*)

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Abstract:
Part of the human diet includes organisms of marine ecosystems, which are characterized by the presence of different concentrations of mineral substances, lipids, proteins, amino acids etc. The increasing prevalence of processing and thermal treatments of fish affects the appearance of increasing amounts of waste materials, which include different parts of fish such as the head, scales, carcass, where each of these components carries with it a certain amount of bioactive compounds, which can be reused for various nutritional, medical, pharmaceutical and biotechnological properties. In addition to the mentioned organs that can be found in waste, the liver is one of the key components and of interest in many researchers due to its rich content of different fatty acids. One of the crucial acids in the biochemical and metabolic processes of mammals, since they can't be synthesized in their organism are omega – 3 fatty acids, α – linolenic acid (ALA), eicosapentaenoic (EPA) and docosahexaenoic acid (DHA). In a sample, quite dominant fatty acid was *cis* – 13, 16 – docosadienoic acid (13.09%), while there was a lower percent of *cis* – 5, 8, 11, 14, 17 – eicosapentaenoic acid (1.64). Linoleic and α – linolenic amino acids were presented in approximately the same percentage (linoleic acid – 2.84%; α – linolenic acid – 2.1%). The content of fatty acids and other substances

depends on many factors: climate, weather, quality of water and pollution; however, the importance of their daily intake is emphasized due to their benefits for human health (improvement of inflammatory response, prevention of cardiovascular diseases). Excessive doses can also have negative effects.
Keywords: Fish, fatty acids, waste, liver, omega – 3

107. Investigations on the Administration of the Dietary Supplement Diavit in Dogs With Diabetes Mellitus

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Abstract:
Canine diabetes mellitus is a frequent endocrinopathy associated with chronic hyperglycemia, metabolic imbalance, and secondary hepatic, pancreatic, and renal disturbances. The present study evaluated the clinical and paraclinical effects of adjunctive administration of Diavit in dogs diagnosed with insulin-dependent diabetes mellitus. Ten adult dogs (5 males, 5 females), aged 4–16 years, were included. All animals received insulin therapy, dietary management, and oral supplementation with Diavit for 30 days. Hematological, biochemical, glycemic, fructosamine, and ultrasonographic assessments were performed before and after supplementation. Mild reductions in erythrocyte indices and significant leukocyte differences between sexes were identified. Hepatic enzymes were increased in several dogs, suggesting associated hepatopathy. Mean serum glucose decreased from 198.6 to 171.6 mg/dL in males and from 204.5 to 164.9 mg/dL in females after treatment. Fructosamine concentrations also declined significantly within groups ($p<0.05$). Ultrasonography revealed pancreatic and gastrointestinal abnormalities in selected cases. The results suggest that Diavit may provide beneficial adjunctive metabolic support in diabetic dogs when combined with standard insulin therapy.
Keywords: glycemic control, fructosamine, pancreatic alterations, hepatopathy, insulin therapy

108. Growth Dynamics and Morphometric Predictors of Body Weight in Rhode Island Chickens

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Abstract:
The present study aimed to analyze the growth dynamics and the relationships between body weight and morphometric traits in Rhode Island chickens reared in a semi-intensive system. The research was conducted on a group of 20 birds over a period of 32 weeks, during which body weight and several body measurements were periodically recorded and statistically processed. The results highlighted a continuous increase in body weight, reaching an average of 2460 g at 32 weeks. Strong and significant positive correlations were identified between body weight and key morphometric parameters, particularly chest width, pelvic width, thoracic perimeter, and trunk depth. Regression analysis demonstrated that body weight can be accurately predicted using body measurements, with high coefficients of determination, especially when using thoracic perimeter as a predictor. These findings confirm that morphometric traits are reliable indicators of growth and body conformation and can be effectively used to estimate body weight. The study emphasizes the practical importance of such predictive models for improving management, selection, and economic efficiency in poultry production systems.
Keywords: growth dynamics; morphometric traits; body weight prediction; regression analysis; poultry production; biometric measurements.

109. Study on managerial strategies in the HoReCa industry from the customer perspective

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Abstract:
This study is of particular importance because the HoReCa industry plays an extremely important role in economic and social development, and the analysis of management strategies from the customer perspective is necessary especially in the context of a market that is characterized by intense competition. To carry out the work, we used a

questionnaire as a research tool and, based on the responses obtained, we analyzed customers' perceptions regarding their experience in HoReCa units. From the analysis of the results, we observed that customers place great emphasis on operational efficiency and human interaction, considering it necessary to reduce waiting time, improve staff behavior, but also access to lower prices. The success of businesses in the HoReCa industry depends on the existence of well-defined management strategies, but also on the ability of the staff to implement them, and to constantly adapt to consumer behavior that is constantly changing and to technological evolution.

Keywords: managerial strategies, customer perspective, competition

110. Sustainable management and the perception of the younger generation regarding sustainable tourism

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Abstract:
The concept of sustainable management in tourist units highlights the main dimensions of sustainability found in the specialized literature (economic, social and with an emphasis on ecological). Climate change but also the increase in the number of tourists has made managers in tourist units increasingly concerned with environmental protection and adopting sustainable practices. The research is based on an empirical approach, being carried out through a quantitative study based on a questionnaire, applied to a sample of young people.
In this paper, we analyzed the perception of young people on sustainable tourism and observed that they are much more concerned with environmental issues, understanding very well the impact of tourism on nature (ecosystem degradation, pollution). Regarding sustainable tourism, a positive perception of young people is observed because they have access to education and awareness campaigns, but their behavior is not always appropriate, having expectations from organizers to adopt sustainable practices.

Keywords: sustainable management, tourism, sustainable behavior

111. An overview of Romania's Gross Domestic Product

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Abstract:
This article presents an analysis of the overall evolution of the Romanian economy, which is summarized in its major result, the dynamics of the total Gross Domestic Product and the Gross Domestic Product per capita, and is compared with the changing levels of Romania's GDP. GDP is known as the main indicator that measures the national economy and is defined as the value of the set of goods and services that are produced by the economy without the value of the goods/services used in their creation. An understanding of its dynamics can be achieved by analyzing the areas that contribute to its increase, but also those that have negatively influenced the economy. The evolution picture is not uniform. A number of branches have recorded negative developments, pulling down the final result. To these are added the areas where the impact was reduced or neutral on the GDP. Romania is going through an economic stage characterized by fiscal uncertainty, internal political tensions, but also geopolitical tensions and climate change, which have left their mark on the evolution of GDP as the main indicator for measuring the national economy.
In conclusion, the challenge for Romania is to transform modest growth into sustainable development, based on a competitive industry, alongside robust exports and innovation.

Keywords: economic sectors, resource categories, gross value added, uses, macroeconomic aggregates.

112. Investments in Romanian Agriculture, between Profit Opportunities and Sustainable Development

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Abstract:
The paper analyzes the financing opportunities in Romanian agriculture, knowing that it stands out as one of the most promising sectors in Europe, through its vast untapped potential. Investors have a remarkable opportunity to generate profit and support a sustainable development of agriculture. In terms of the richness of natural resources, cultural diversity and implicit orientation towards sustainability, Romanian agriculture is considered a strategic field. Investments become essential in agriculture, especially in terms of revitalizing and innovating this sector that occupies a vital position. Through the National Strategic Plan 2023-2027 (NSP), which is implemented through the Ministry of Agriculture, considerable resources are allocated from the Common Agricultural Policy. Essential support is provided through European and national Programs to ensure the development of infrastructure, but also for modernization.
Accelerated profitability of the agricultural sector can be ensured through the opportunities that those who wish to invest can choose, namely: specialized crops (example: choosing forest fruits, aromatic or medicinal plants), investments in dairy, meat or egg farms by adopting modern agricultural technologies and efficient management at international standards, the development of local processing units (dairy, bakery or canned food) and the adoption of Smart Farming technologies that ensure higher profit margins.
Sustainable Development is the pillar of the future of Agriculture, which is ensured through organic and bio-agriculture, through precision irrigation systems, along with the collection of rainwater, the reuse of organic resources, integrated production, but also the use of renewable energy, innovation and research to ensure sustainability, collaboration between universities and research institutes. In conclusion, the sources of financing for Agricultural projects are the funds allocated through the Common Agricultural Policy (CAP) and its Programs, along with the engine for agricultural modernization, respectively the funds from the National Recovery And Resilience Plan (NRRP).

Keywords: financing, modernization, European funds, European programs, state subsidies

113. Microbiological Profile and Safety Evaluation of Apilarnil from the South Region of Romania

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Abstract:
Apilarnil (drone brood product) is a natural bee-derived product obtained from young drone larvae, increasingly recognized for its nutritional and functional properties. As a potential novel food at European level, ensuring its microbiological safety is essential to guarantee consumer health and product quality.
This study aimed to evaluate the microbiological profile and safety of apilarnil under different processing conditions (native, frozen, and lyophilized forms). The analyses included the determination of total viable count (TAMC/NTG), yeasts and molds (TYMC), and the detection of *Escherichia coli*, using standardized methods (ISO standards and European Pharmacopoeia). Additionally, the health status of the source apiaries was assessed through parasitological and bacteriological examinations targeting pathogens of epidemiological importance, according to WOAH guidelines. Mycological investigations were also performed to identify fungal contaminants based on cultural and morphological characteristics.
The results indicated that native apilarnil is not a sterile product, with microbial load influenced by raw material quality and handling conditions. However, freezing and especially lyophilization significantly reduced microbial counts. Despite the absence of sterility, all analyzed samples met acceptable safety criteria, demonstrating that apilarnil is safe for human consumption both in fresh and processed forms, and can be successfully used as a raw material in various food formulations when obtained and handled under appropriate hygienic conditions.

Keywords: bee derived product, novel food, nutritional properties.

114. Effect of progesterone–PMSG estrus synchronization on litter size in Alpine French and Saanen goats

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Abstract:
The objective of this study was to evaluate the influence of an estrus synchronization protocol using progesterone and PMSG on litter size in Alpine French and Saanen goats under the conditions of a Western Romanian farm. The research was conducted in 2025 on a dairy goat farm located in Traian Vuia, Timiș County, Romania. A total of 40

adult does were included and divided into two main groups: a treated group of 20 goats (10 Alpine French, 10 Saanen) and a control group of 20 goats (10 Alpine French, 10 Saanen).
In the treated group, estrus synchronization was performed by inserting intravaginal progesterone sponges (CIDR) on Day 0, removing them on Day 10 and administering PMSG at a dose of 350 IU, followed by natural mating on Days 11–14, at the onset of estrus. The control group was subjected only to natural mating, without any hormonal treatment.
The results showed an average litter size of 2.0 per doe in the treated Alpine French group and 1.9 per doe in the treated Saanen group, compared with 1.5 in the Alpine French control group and 1.4 in the Saanen control group. The applied protocol therefore increased litter size in the treated groups compared with the controls, suggesting a beneficial effect of the progesterone–PMSG combination on reproductive performance in the studied goat breeds.

Keywords: dairy goats, reproductive performance, estrus induction, Timis County

115. Salmon Belly Flaps Processing Towards Sustainable By-Product Valorisation

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Abstract:
In the current context of circular economy principles and the need to reduce food waste, the comprehensive valorisation of by-products generated during fish processing represents a strategic priority for the food industry. This study investigates the potential utilization of salmon belly flaps, by-products obtained after filleting, through their conversion into raw meat, thermally processed meat, and fish oil, with subsequent applications in food product development. It evaluated the technological yields associated with these fractions, supported by descriptive statistical analyses. The results indicated a raw meat yield of 56.16 ± 5.91% relative to the initial belly flap mass, a thermally processed meat yield of 46.51 ± 3.69% relative to raw meat, and an oil yield of 13.83 ± 2.06%. When expressed relative to the initial raw material, the overall yields were 26.04 ± 2.62% thermal processing meat and 7.78 ± 1.49% for oil. Additionally, waste and technological losses were quantified, highlighting the effect of processing stages on overall efficiency. The results demonstrate that salmon belly flaps represent an underutilized resource with potential for valorisation through appropriate processing technologies. The integration of secondary streams into the production chain can contribute to improved sustainability, yield optimization, and waste reduction in the fish processing industry.

Keywords: meat yields, oil yields, raw meat, technological losses, thermal processing, waste.

116. Chemical Composition and Antioxidant Potential of Walnut (*Juglans regia*) Stone Leaves

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Abstract:
Walnut (*Juglans regia*) leaves represent a valuable plant resource, traditionally used in phytotherapy due to their rich content of bioactive compounds. In recent years, interest in their chemical characterization has increased, considering their nutritional and antioxidant potential, as well as their possible applications in the food, pharmaceutical and feed industries.
The leaves analytical determinations were carried out using standard chemical analyses to evaluate proximate composition (protein, fat, cellulose, ash), as well as spectrophotometric and specific analytical methods for quantifying mineral elements (Ca, P, Cu, Fe, Mn, Zn) and bioactive compounds (carotenoids and vitamin E), total polyphenols content and antioxidant capacity (DPPH).
The results showed that walnut leaves contain high protein content (16.84%), are low in crude fat (2.05%), and significant crude fiber content (12.17%) indicating a rich nutritional composition. The ash content was 9.12%, reflecting the presence of essential minerals: Ca (1.57%), P (0.53 %), Cu (12.23 mg/kg), Fe (94.90 mg/kg), Mn (65.88 mg/kg), and Zn (36.46 mg/kg). Regarding bioactive compounds, high concentrations of lutein (473.87 mg/kg) were identified, along with the presence of astaxanthin (21.05 mg/kg) and canthaxanthin (84.34 mg/kg). The vitamin E content was 596.79 mg/kg, suggesting a significant antioxidant capacity.
Walnut leaves are distinguished by a rich chemical composition in nutrients and bioactive compounds with antioxidant roles. These characteristics support their use as raw material in the development of functional products and natural supplements, while also highlighting the need for further studies on bioavailability and biological effects.

Keywords: walnut; leaves; bioactive compounds; additives; sustainability; recovery.

Acknowledgements
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117. Building a Sustainable Campus: A Living Lab Approach to Integrating Community Gardens into Higher Education for Sustainable Development

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Abstract:
This paper analyzes the implementation of a "University Community Garden" as a model for fostering Sustainable Development (SD) within higher education. The research proposes a 3,000 m^2 "Living Lab" pilot project, inspired by German urban sustainability practices, featuring 16 community plots and multifunctional spaces for collaborative learning.
The methodology integrates a review of international sustainability frameworks with a practical business plan designed for institutional viability. Unlike traditional green spaces, this model utilizes a service-learning approach where a "monthly rental system" and "gardening guides" ensure economic responsibility and social cohesion. The study demonstrates how this initiative addresses the triple bottom line of sustainability: environmental protection through biodiversity, social equity through engagement, and economic stability through a self-sustaining model.
Results suggest that this holistic approach enhances the university's sustainability profile, providing a platform for students and staff to practice resource management. The paper concludes that the proposed garden is a strategic branding tool, positioning the university as a leader in Sustainable Development by bridging the gap between theoretical goals and local action.
Keywords: circular economy, community engagement, higher education, living lab, sustainable development, urban agriculture.

118. Implementing Bioenergy Solutions Amidst Geopolitical Instability A Case Study of Sri Lanka

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Abstract:
The current global energy landscape, heavily influenced by recent geopolitical conflicts, has exacerbated the fuel crisis in emerging economies like Sri Lanka. This study explores the potential of biotechnological interventions to

mitigate energy dependency by converting local organic waste into sustainable biofuels. Specifically, the research focuses on the anaerobic digestion of agricultural residues—such as tea and coconut processing waste—to produce biogas. By integrating environmental protection principles with biotechnological processes, the paper proposes a decentralized energy model that empowers local communities. This approach not only addresses the immediate fuel shortage but also promotes circular economy practices and waste management efficiency. The presence of a native student from Sri Lanka in the research team provides authentic socio-economic data and site-specific context, ensuring that the proposed solutions are both technically viable and culturally adaptable. The study concludes that bioconversion of waste is a critical tool for national energy resilience in times of international instability.

Keywords: Bioconversion, waste, biogas, sustainability, resilience.

119. Evaluation of the influence of essential oils on the productive potential and health status of domestic rabbits

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Abstract:
The study investigates the effects of administering essential oils with antimicrobial and antioxidant potential such as thyme *(Thymus vulgaris)*, oregano *(Origanum vulgare)* and basil *(Ocimum basilicum)* on the productive performance and intestinal microbiological parameters in German Sheep rabbits. Four groups were taken into the study, including the control group and three experimental groups. During the 60-day period, relevant zootechnical indicators for evaluating nutritional efficiency were monitored: average daily feed intake, average daily gain, specific intake and slaughter yield. In parallel, the microbial load at the intestinal level was determined, in order to assess how essential oils influence the balance of microflora. The animals were weighed at three experimental times: at the beginning of the study (26th of March), after 30 days (26th of April) and at the end of 60 days (26th of May), to capture the dynamics of body weight evolution. The results obtained provide an integrated perspective on the use of essential oils as natural additives in rabbit feed, suggesting the possibility of optimizing productive performance and improving health status by administering natural products. The data highlighted in this study may contribute to the development of modern nutritional strategies, oriented towards reducing the use of antibiotics and capitalizing on natural alternatives in current rabbit breeding systems.

Keywords: natural supplements, *Oryctolagus cuniculus*, productive performance

120. External Morphometric Characterization of 18-Month-Old European Catfish (*Silurus glanis*) Reared in a Recirculating Aquaculture System

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Abstract:
The European catfish (*Silurus glanis*) is a valuable freshwater species for aquaculture due to its growth potential, adaptability to controlled conditions, and commercial value. Rearing this species in a recirculating aquaculture system (RAS) allows the maintenance of optimal environmental conditions and supports the production of uniform, well-developed stocks. The main objective of this study was to evaluate the external morphometric characteristics of a population of European catfish aged 18 months, reared in a recirculating aquaculture system. For this purpose, 30 specimens from the "Pădurea Verde" Fish Farm, belonging to the Didactic Station of Timișoara, were analyzed. Standard morphometric measurements were recorded for each individual, and the resulting data were statistically analyzed to determine the main morphometric parameters, body indices, and the relationships between body length and body weight. The results revealed proportional body development and a high degree of uniformity within the analyzed population. The mean body weight was 759.20 ± 99.81 g, while the mean total length was 47.20 ± 2.09 cm. Most of the analyzed parameters exhibited low coefficients of variation, indicating limited individual variability. Body indices, head measurements, and fin parameters also showed low variability, supporting the uniform development of the analyzed stock. The relationship between body weight and total length was described by the equation $W = 0.0942 \times L^{2.3319}$, with a coefficient of determination of $R^2 = 0.6306$. The exponent value b = 2.3319 indicates a negative allometric growth pattern, characterized by a more pronounced increase in length relative to body weight. In addition, Pearson correlation analysis revealed significant relationships between body weight and the main morphometric parameters, including total length, standard length, maximum body height, and body perimeter. The obtained results contribute to the external morphometric characterization of European catfish reared in RAS and provide valuable information for the optimization of rearing technologies in intensive aquaculture systems.

Keywords: body indices, correlations,

121. Sustainable Biotechnological Methods for Enhancing Immunity in Freshwater Fish in Recirculating Aquaculture Systems: A Review

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Abstract:
The development of intensive and superintensive aquaculture, especially in recirculating aquaculture systems (RAS), requires the adoption of efficient and sustainable methods to maintain fish health under intensive rearing conditions. In this context, biotechnological interventions aimed at stimulating immunity represent an essential direction for disease prevention and for increasing the efficiency of fish production. This review summarizes the main categories of biotechnological methods used to enhance immunity in freshwater fish, including probiotics, prebiotics, synbiotics, postbiotics, phytobiotics, plant extracts, β-glucans and other nutritional immunostimulants, vaccines, and advanced immunization technologies. Emerging directions are also discussed, such as microbiome modulation, nanotechnology, microalgae, microencapsulation, nutraceuticals, omics approaches, and modern genetic tools, which may contribute to the development of personalized and effective interventions. The paper highlights the role of the gut microbiota in regulating the immune response, as well as the influence of environmental factors and RAS-specific stressors on fish health. The integration of biotechnological strategies with environmental management and precision nutrition is an essential condition for optimizing biological performance and maintaining metabolic and immune balance in fish. In conclusion, sustainable biotechnological approaches offer promising solutions for the development of resilient and environmentally responsible aquaculture. However, their large-scale application requires protocol standardization, validation under real farming conditions, and integration into appropriate management frameworks adapted to recirculating aquaculture systems.

Keywords: aquaculture biotechnology, disease prevention, intensive aquaculture, RAS

122 Economic Performance and Viability of Small-Scale Pig Farms in the Context of the Agro-Food Market

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Abstract
Small-scale pig farming plays a crucial role in rural economies by supporting food security, employment, and income diversification. However, these farms face increasing challenges due to rising input costs, market volatility, and competition from industrial producers. This study aims to evaluate the economic performance and viability of small-scale pig farms within the agro-food market.
The research is based on a quantitative case study of a representative 100-head pig farm and employs key economic indicators, including total costs, gross margin, net profit, and profitability rate. A cost–benefit analysis and sensitivity analysis were conducted to assess the impact of feed cost fluctuations on farm performance.
The results indicate that feed costs represent the dominant component of total production costs (over 60%), making profitability highly sensitive to input price changes. Under baseline conditions, the farm achieves a positive profitability rate of 13.8%, but a 20% increase in feed costs leads to negative economic outcomes. These findings highlight the fragility of small-scale pig farms and the importance of efficient cost management.
The study concludes that while small-scale pig farms can remain viable, their sustainability depends on cost optimization, market integration, and diversification strategies. Policy support and improved access to short supply chains are essential for enhancing competitiveness in the agro-food sector
Keywords: small-scale pig farming; economic performance; profitability; cost–benefit analysis; agro-food market;

123 Analysis of the Influence of Meteorological Factors on Honey Bee Colonies During the Overwintering Period

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Abstract
Honey bee colonies (*Apis mellifera*) are a fundamental component of ecosystems in Romania, their development being significantly influenced by meteorological conditions both during the active season and throughout the overwintering period. The present study aims to assess the impact of key meteorological factors on honey bee colonies, based on data collected using BeeConn smart monitoring systems. The research was conducted between

November 25, 2025, and March 1, 2026, corresponding to the cold season, within the apiary of the University of Life Sciences "King Mihai I" of Timişoara. Environmental parameters such as temperature, humidity, wind speed, UV radiation, and precipitation, recorded by the BeeConn systems, were monitored alongside biological indicators including hive weight, food reserves, and bee mortality. The results highlight significant correlations between meteorological conditions and the overwintering performance of honey bee colonies. The study emphasizes the important role of digital monitoring technologies in apiculture and contributes to the advancement of precision beekeeping practices.

Keywords: bee colonies, meteorological factors, overwintering, digital monitoring, BeeConn system

124 Biological Effects of Salicylate Compounds on the Skin

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Abstract
Salicylate compounds, a class of bioactive molecules derived from salicylic acid, play a pivotal role in contemporary dermatological therapy due to their multifaceted biological effects at the cutaneous level. This paper provides a comprehensive analysis of the mechanisms of action, therapeutic efficacy, and safety profile of salicylates in dermatological applications. At the epidermal level, salicylates exert pronounced keratolytic and comedolytic effects by solubilizing intercellular cohesion and reducing corneocyte adhesion within the stratum corneum. This facilitates controlled desquamation, enhances epidermal turnover, and promotes the clearance of follicular occlusions, making these compounds particularly valuable in the management of acne vulgaris, hyperkeratosis, and disorders of keratinization. Beyond their exfoliative properties, salicylates demonstrate significant anti-inflammatory activity mediated through the inhibition of cyclooxygenase (COX-1 and COX-2) enzymes and subsequent downregulation of prostaglandin synthesis. Emerging evidence also suggests their involvement in modulating nuclear factor kappa B (NF-κB) signaling pathways, thereby attenuating the expression of pro-inflammatory cytokines and contributing to the reduction of erythema and edema in inflammatory dermatoses. Additionally, salicylates possess mild antimicrobial and antifungal effects, further supporting their use in conditions such as seborrheic dermatitis and

superficial infections. The pharmacokinetics and bioavailability of topical salicylates are influenced by formulation variables, including vehicle type, pH, and concentration, as well as by skin barrier integrity and anatomical site of application. While low to moderate concentrations are generally well tolerated, higher concentrations may induce local irritation, barrier disruption, or, in rare cases, systemic toxicity (salicylism), particularly when applied over large surface areas or compromised skin. In conclusion, salicylate compounds represent a cornerstone of dermatological therapeutics, offering a synergistic combination of keratolytic, anti-inflammatory, and antimicrobial effects. Their continued clinical relevance is supported by both established evidence and ongoing research into novel delivery systems and optimized formulations aimed at maximizing efficacy while minimizing adverse effects.

Keywords: dermatological therapy, antibacterial, antifungal, anti-inflammatory

125 The role of protein-mineral-vitamin nutrition in ensuring reproductive function in sheep

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Abstract
The synergistic effects of protein, mineral and vitamin nutrition in sheep strongly influence reproductive efficiency, as they are directly involved in the regulation of endocrine activity, metabolic balance and reproductive physiology. The paper aims to synthesize current knowledge about the integrated role of these nutritional components in supporting reproductive function, influencing processes such as follicular development, ovulation, conception, embryo survival and fetal growth. Protein nutrition provides the essential amino acids necessary for hormone synthesis, tissue development and enzymatic activity. Ensuring an adequate protein intake supports optimal ovarian function, while imbalances - especially excess rumen-degradable protein - can increase blood urea nitrogen levels, causing a negative effect on the uterine environment and embryo viability. Energy-protein interactions are considered critical, as the efficient use of dietary protein depends on an adequate energy intake. The minerals selenium, zinc, copper, iodine and manganese play an essential role in reproductive physiology through their involvement in hormone synthesis, antioxidant defense systems, immune function and cellular metabolism. Zinc is

an essential mineral for gonadal development and steroidogenesis, while iodine is essential for the production of thyroid hormones and the regulation of metabolic activity. Selenium and vitamin E act synergistically to protect reproductive tissues from oxidative stress, thus improving fertility and reducing embryonic losses. Vitamins A, D and E are the most important vitamins responsible for maintaining reproductive health. Vitamin A is involved in epithelial integrity and embryonic development, vitamin D regulates calcium metabolism and ovarian function, and vitamin E acts as a key antioxidant, protecting gametes and embryos from oxidative stress. Deficiencies or imbalances in these micronutrients may result in reproductive disorders, including delayed puberty, anestrus, reduced conception rates and increased embryonic mortality. In conclusion, protein-mineral-vitamin nutrition plays a major role in regulating the reproductive performance of sheep. Achieving an optimal balance of these nutrients is essential for improving fertility, supporting embryo development and ensuring sustainable sheep production systems.

Keywords: endocrine activity, fertility, reproductive physiology

126 Circular Bioeconomy and Renewable Energy System Built in ULS Timişoara as an Example for Sustainable Development

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Abstract
University of Life Sciences "*King Mihai I*" from Timisoara, Romania (ULST) is dedicated on research&development in agriculture, bio-economy and management of bioresources. The carbon footprint of the campus and its inhabitants can be decreased by harnessing local renewable resources by converting these resources into electricity and thermal energy for consumption at the campus. The energy system constructed between 2023 - 2025 consists of two installations: a biogas plant with a combined heat and power unit with an installed capacity of 100 kW and a photovoltaic panel installation with an installed capacity of 150 kW. The total electricity production capacity of the system is approximately 825 MWh/year, which can cover approximately 40% of the total electricity consumption of the campus. This production will displace fossil-fuelled power from the grid, natural gas currently used for heating purposes and mitigate methane emissions. Total equivalent CO_2 emissions savings are 2400 tons per year. The purpose of the completed energy system is to serve as a demonstration project for the local community, farmers, food industry as well as a perfect case for involving students for a hands-on experience in developing circular bioeconomy and renewable energy competences.
Keywords: bioeconomy, biogas, circular economy, photovoltaic, renewable energy

127 Study on the Identification of Optimal Conditions for Goat Milk Yogurt Production

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Abstract: Goat milk has gained increasing interest in the dairy industry due to its high nutritional value and superior digestibility compared to cow milk. The aim of this study was to optimize the technological parameters for obtaining goat milk yogurt with acceptable sensory properties and balanced chemical composition. Experimental trials were conducted in a private production unit using goat milk from the farm's own herd. Cow milk yogurt incubated at 42°C was used as the control sample, while goat milk yogurt samples were incubated at 30°C, 37°C, and 42°C. Each sample was prepared in five replications and evaluated by a sensory panel of 20 assessors using a 9-point hedonic scale. Physicochemical analyses included total solids and titratable acidity determinations according to AOAC (1990). Samples were stored at 4 ± 1°C and evaluated during 10 days of storage. Statistical analysis revealed significant differences among samples ($p \leq 0.05$). The results showed that the incubation temperature of 42°C provided the best sensory acceptability, balanced acidity, and improved storage stability. These findings demonstrate the valuable technological potential of goat milk for the production of high-quality fermented dairy products.

Keywords: goat milk, yogurt, incubation temperature, sensory evaluation, physicochemical properties

128 Effects of Rearing System and Carcass Characteristics on Cooking Losses in Pork

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Abstract: The aim of the study was to evaluate the influence of raw meat quality, carcass weight, and rearing system on cooking losses and sensory properties of pork meat. The research was conducted on the *Longissimus dorsi* muscle collected from five categories of pork carcasses differentiated by lean meat percentage, carcass weight, pH value, and rearing system.
The analysis of chemical composition revealed relatively constant values of water and dry matter content among the experimental groups, indicating a similar hydration level of the muscle tissue. However, drip losses measured after 24 hours showed significant differences, with the lowest values recorded in samples P1 and P2, suggesting a good water-holding capacity. The highest losses were observed in meat obtained from heavy carcasses (P3) and low-pH samples (P5), indicating reduced water retention capacity and a possible decrease in sensory quality.

The results demonstrated that the final internal temperature was the main factor influencing cooking losses, which increased with the intensity of the thermal treatment. Moderate cooking temperatures resulted in lower losses and superior juiciness compared to high-temperature cooking. Furthermore, carcass characteristics and the rearing system significantly influenced the thermal behavior of the meat, with meat from the traditional rearing system showing the best water-holding capacity and the lowest cooking losses.
Keywords: pork meat, cooking losses, drip loss, carcass quality, rearing system, *Longissimus dorsi*.

129 Apiculture in two different geographical contexts: Togo and Romania

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Abstract
In Togo, beekeeping is practiced across all regions by farmers who are interested in this activity. It plays an important role in agricultural economy and rural development. Our study, conducted in the central region of Togo, aims to identify beekeeping practices. In this regard, case studies were carried out on a sample of 291 beekeepers from 22 cantons across five prefectures of the region. Data on beekeeping practices were collected using survey questionnaires, and correlation analyses were performed using SPSS software version 20. The results showed that five types of hives were used: Kenyan top-bar hives, traditional hives, Dadant hives, elongated hives, and concrete Kenyan hives. However, Kenyan hives were the most widely used, accounting for 53.46% of the total hives. Five colony capture techniques were identified, with wax bait being the most frequently used method, representing 43.3% of cases. Correlation analyses between colony abandonment and capture techniques revealed an inverse relationship, with a correlation coefficient (r) of -0.75 and a p-value of 0.00. Vegetation fires were also reported as a contributing factor to colony abandonment and to the failure of hive colonization. Beekeeping in Romania is a long-established agricultural activity with a strong tradition, making an important contribution both to the economy and to the maintenance of natural ecosystem balance. The diversity of geographical and climatic conditions results in a rich melliferous resource base, which supports the development of a highly representative apicultural sector in Romania. The study analyzes the main aspects of beekeeping in Togo and Romania, with emphasis on the organization of apiary farms, the types of technologies employed, and the specific growth conditions characteristic of each region. Differences and similarities between the two geographical areas are highlighted with regard to beekeeping practices and their adaptation to local conditions. Additionally, aspects related to the production and valorization of apicultural products are analyzed, as well as their contribution to rural economic development and the support of local communities.

Keywords: Beekeeping, beekeeping practices, hive types, colony capture techniques.

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