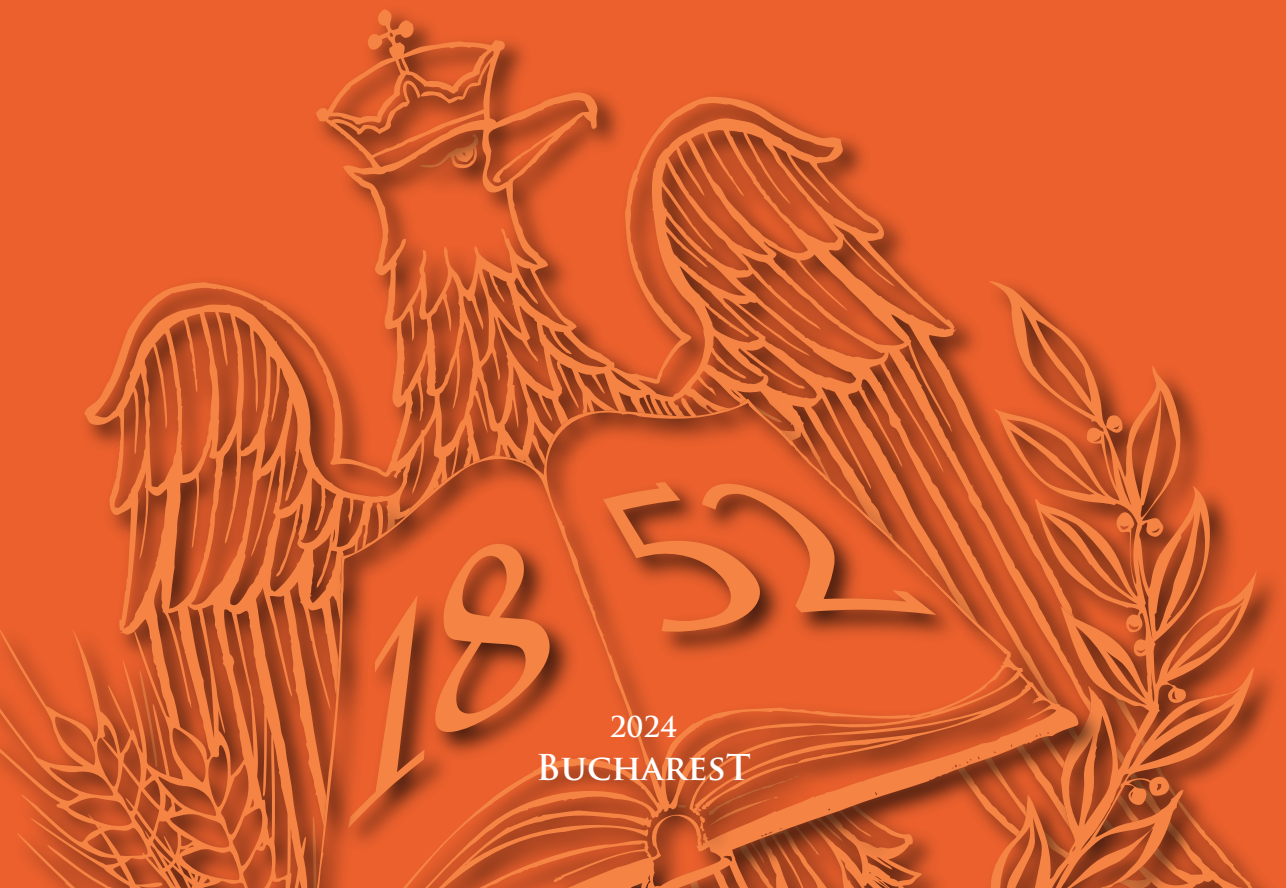
University of Agronomic Sciences
and Veterinary Medicine of Bucharest
Faculty of Animal Productions
Engineering and Management

International Conference
"Agriculture for Life, Life for Agriculture"

BOOK OF ABSTRACTS

Section 3

ANIMAL SCIENCE



2024
Bucharest

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SUMMARY

SESSION GENETICS AND BREEDING

SESSION NUTRITION

SESSION REPRODUCTION, PHYSIOLOGY, ANATOMY

SESSION TECHNOLOGIES OF ANIMAL HUSBANDRY

SESSION TECHNOLOGIES OF THE AGRO FOOD PRODUCTS PROCESSING

SESSION
GENETICS
AND BREEDING

ASSOCIATION OF *FABP3* GENE POLYMORPHISM WITH MILK PRODUCTION IN EWES FROM THE BULGARIAN DAIRY SYNTHETIC POPULATION

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Abstract

The purpose of the research is to explore the relationship of the polymorphism of the FABP3 gene with milk yield per standard 120-day milking period (TMM120) in ewes from the Bulgarian Dairy Synthetic population from the herd of the Agricultural Institute-Shumen. In the experiment were involved 111 ewes of different lactations. Ewes were selected by birth type (single, twins, triplets) and had 343 milk yield records for a standard 120 days milking period. Two alleles and two genotypes were identified in the studied animals in exon 2 of the FABP3 gene (SNP3) by the PCR-RFLP technique with BseDI endonuclease. The association of the FABP3 gene polymorphism with the milk productivity of sheep was investigated by the one-way analysis of variance ANOVA model. In this study of BDSP ewes, the presence of a homozygous GG genotype at SNP3 of FABP3 resulted in increased milk yield in 2nd lactation ewes and in co-twin ewes.

Key words*: birth type, FABP3 gene, milk yield, parity, sheep.*

INFLUENCE OF PRODUCTION YEAR ON THE MILK PRODUCTIVITY IN EWES FROM THE BULGARIAN DAIRY SYNTHETIC POPULATION

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Abstract

The aim of the study was to determine the influence of production year on the milk yield per standard 120-day milking period of sheep from the Bulgarian Dairy Synthetic population in the flock of Agricultural Institute-Shumen. Milk productivity data of 2193 sheep of different ages, produced in the period 2015-2020, were analyzed. For the individual years, the following were determined: duration of lactation and milking period, milk yield per milking period (TMM), average daily milk yield per milking period ($ADMY^{milking\ period}$) and milk yield per 120-day standard milking period (TMM120). The influence of the production year on milk yield per standard 120-day milking period was determined by the ANOVA model for one-way analysis of variance. The total milk productivity for the standard 120-day milking period of sheep in the individual production years was within 94,798-115,541 l, with the determined differences having a high degree of significance (P≤0,001). A highly significant effect of the production year factor on the milk yield per standard 120-day milking period per consecutive lactation was established.

Key words*: Bulgarian Dairy Synthetic Population, milk productivity, production year, sheep.*

ANALYSIS OF BLOOD BIOCHEMICAL PROFILE OF ENDANGERED ROMANIAN GREY COWS ACCORDING TO AGE

Madalina Alexandra DAVIDESCU, Daniel SIMEANU, Cristina SIMEANU, Claudia PANZARU, Alexandru USTUROI, Steofil CREANGA

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Abstract

This study was conducted to analyze the blood biochemical parameters with aim to monitor the health status of 32 Romanian Grey Steppe cattle being in a national genetic conservation program due to their biological characteristics such as rusticity, adaptability to severe environmental conditions, increased resistance to disease, and longevity. A number of 8 biochemical parameters were statistically analyzed, respectively: GLI (glucose), CHO (cholesterol), TP (total protein), Ca (calcium), ALAT (alanine aminotransferase), AST (aspartate aminotransferase), P (phosphorus), and ALB (albumin). The cattle were between 2-24 years old. The results were analyzed by age category, respectively 2-10 years and 11-24 years. Mean values of GLI, CHO, ALB, and TP were higher in the older cattle group, while mean values of ASAT, ALAT, Ca, and P were higher in younger cattle. Monitoring the health status of endangered cattle breeds is an important aspect of genetic conservation program. In this research, the results of the biochemical profile fell within the range of the reference values for both age categories, an aspect that demonstrates the resistance, longevity, and genetic characteristics of this breed.

Key words*: biochemical profile, blood, cattle, Grey Steppe.*

AN APPROPRIATE APPROACH ON THE IMPLICATIONS OF MICROARRAY TECHNOLOGY FOR ANIMAL GENETIC RESEARCH

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Abstract

Microarray technology has emerged as a powerful tool in the field of animal genetic research, offering a comprehensive and high-throughput method for analysing the expression of thousands of genes simultaneously. This paper explores the implications of microarray technology in advancing understanding of animal genetics, focusing on its applications, challenges, and potential contributions to various aspects of genetic research. The paper begins by providing an overview of microarray technology, detailing its principles and the array of applications it offers for investigating gene expression, genetic variations, and regulatory mechanisms in animals. Furthermore, this paper addresses the challenges associated with microarray data analysis, emphasizing the importance of bioinformatics methods to extract meaningful insights from large-scale genomic datasets. This study aims to guide researchers in choosing appropriate methodologies, highlighting best practices, and fostering a deeper understanding of the implications and limitations of this technology in the context of animal genetic research. This exploration also contributes to the ongoing dialogue within the scientific community on optimizing the use of microarray technology to unlock the mysteries of animal genetics and advance the knowledge of biological systems.

Key words*: animal research, gene expression, genetic data analysis, microarray.*

NON-GENETIC FACTORS AFFECTING LAMENESS CASES AND MILK PRODUCTION LOSSES CAUSED BY LAMENESS CASES IN DAIRY HERDS: A META-ANALYSIS

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Abstract

Lameness and claw disorders have still adverse effects on cow's health and milk production levels in dairy enterprises. The objectives of this investigation were revealing non-genetic factors affecting lameness cases (LC) and estimating 305 daily milk production losses (305 dMYL) due to LC in dairy herds. A total of fifteen study results reported in the scientific journals between 2002 and 2021 were analyzed. The percentage of the non-genetic factors affecting LC were noted as days in milk (DIM; 31.25%), parity (P; 25%), season (S; 9.37), calving season (CS; 9.37) and others (25%). To estimate the effect of herd size (HS) on 305 dMYL, three HS groups were divided (small: ≤500 cows, moderate: 501-1498 cows and big: ≥1499 cows). Thusly, 305 dMYL were calculated to be 630 kg, 377.2 kg and 493.57 kg, respectively. In country level, 305 dMYL were determined to be 494 kg, 408 kg and 398.66 kg for UK, US and other locations, respectively. Finally, the overall mean of 305 dMYL caused by LC was 419.66 kg/cow.

Key words: *cattle, dairy, environmental factors, milk yield, lameness.*

A STUDY ON THE GROWTH AND DEVELOPMENT OF GOAT KIDS OF THE BULGARIAN WHITE DAIRY BREED UNTIL WEANING

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Abstract

The growth abilities of goat kids from the Bulgarian White dairy (BWD) breed in the period up to the end of weaning (90 days) were studied. The study was conducted in the goat farm of the RIMSA - Troyan, Bulgaria, and a total of 44 clinically healthy goat kids of the BWD breed were examined. Some performance characteristics (birth weight, weaning weight, and average daily gain) as well as exterior measurements were measured. The average daily gain for the first, second, and third month for males is (0.154, 0.236 and 0.265 kg), and for females (0.150, 0.166 and 0.255 kg), respectively. At the age of 3 months, twins reliably outperformed singles and triplets in both weight and size, and their average daily gain for the period was 0.211 kg. At birth and weaning, males outperformed females in all exterior indicators. Live weight, growth intensity, and weight development of young animals are factors of primary importance for selection, as they are related to productivity indicators and influence milk yield, fattening capacity, and slaughtering indicators.

Key words: *body measurement, meat, milk, productivity, weight.*

FOALING RANK AND BREEDERS' HEIGHT AT WITHERS INFLUENCE ON THE MORPHOLOGICAL QUALITY OF SHAGYA ARABIAN FEMALE PROGENY

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Abstract

One of the breeding objectives for Shagya Arabian breed in Rădăuți Stud Farm, Romania, focuses on increasing the height at withers for mares. The current research aimed to study the entire female progeny (175 foals) of 58 broodmares and 44 stallions included in the breeding activity for 40 years The objective was to determine the influence of breeders' height and the foaling number (rank) on the foals' biometrics. The average value of this measurement in female foals has consistently increased from first foaling (157.63 cm) to the fifth one (158.80 cm) throughout 40 years of breeding, indicating the fulfilment of the breeding goal over consecutive reproductive seasons. According to the simulation based on the linear trend equation, the progeny's height at withers could match the fathers' height by the 10th foaling if the same breeding practices were continued. In addition, stallions would have much more influence than broodmares in increasing the height of the foals. Continuing the forecast analysis based on the variations, the required average height at withers values in stallions and mares can be computed to attain a certain value for the descendants.

Key words*: broodmares, height at withers, progeny, Shagya Arabian, stallions.*

PRELIMINARY STUDY REGARDING COMPONENTS OF THE STATISCTICAL MODELS USED IN GENETIC EVALUATION OF TWO BEEF CATTLE BREEDS FROM ROMANIA

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Abstract

Genetic evaluation models are characterized by similar components, unconcerned by the complexity. Therefore, number of fixed and random effects, number of traits and relationship between those components will dictate the accuracy and mathematical power capacity of evaluation. From this perspective, this paper aims to analyze fixed effects and traits used in genetic evaluation of two beef cattle breeds (Charolaise and Limousine). Analyzed traits are birth weight (BW), weaning weight (WW) and average daily gain (ADG). Analyzed fixed effects are farm, year of birth, and sex of the animals. Analysis was performed using principal component analysis packages from R. Results show a very high correlation between WW and ADG on both breeds (0.99). Regarding sex, this shows a little to none influence over BW, WW and ADG (near -20% in average). On the other hand, year of birth is very influential on all the traits (over 50% on BW and WW and near 50% on ADG). In this context, evaluation models must avoid redundant information using just WW. Also, for beef cattle's sex is not so informative as fixed effect.

Key words*: beef cattle, fixed effects, genetic evaluation, principal component analysis, traits.*

AVIAN EVOLUTION: A COMPREHENSIVE REVIEW OF TAXONOMY AND PHYLOGENETIC HISTORY

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Abstract

With an integrative approach to research, this study explores the taxonomy and complex evolutionary history of birds, employing an integrative research approach in order to deconstruct the multi-faceted narrative of bird evolution. By converging molecular phylogenetics, comparative morphology, and biogeographic analyses, we conducted a comprehensive taxonomic reassessment, resulting in fine-tuning the classification of birds and revealing novel phylogenetic relationships. Our exploration extends into the fossil record, where the integration of paleontological data and molecular clock analyses illuminates key evolutionary steps. Our findings highlight a dynamic evolutionary trajectory characterized by diversification events and adaptive radiations that have intricately shaped the avian lineage across geological epochs. Advanced imaging technologies and biomechanical assessments further enrich our understanding of the morphological adaptations underlying avian ecological niches. This multidimensional research not only propels the field of avian taxonomy forward but also provides a nuanced perspective on the complicated coevolutionary dance between birds and their environments. The study provides valuable insights into the broader landscape of avian evolutionary biology, enhancing our understanding of the mechanisms that have sculpted avian diversity and ecological interactions over millions of years.

Key words*: avian evolution, bird taxonomy, phylogenetics, comparative morphology, fossil record.*

STUDY ON THE PRODUCTIVITY OF GOATS INCLUDED IN SELECTION BREEDING WORKS IN OUR COUNTRY

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Abstract

The growing interest in goat milk in our country has required the expansion of research in this species, covering various areas such as nutrition, reproduction, exploitation conditions, milk and meat processing methods, and others. The purpose of this study is to analyze the distribution of goats included in selection works in relation to the total number of goats at national level reported by the National Institute of Statistics, with the following aspects being evidenced: the proportion of goats included in selection works, the distribution by breeds of the number of goats in the genealogical register and their average milk/lactation/breed/region production. The study is of a statistical nature and focuses exclusively on the herds in the Genealogical Register on 31.08.2023, and the results show that the South East Region stands out with an impressive herd of goats, representing 36.16% compared to the Centre Region where, in the selection work, only 2.88% goats are included. The conclusions presented provide a detailed numerical perspective and the potential of each region within the national goat milk scene. These consolidating insights are essential pillars for guiding future strategies and developments in this area.

Key words*: breed**, goat, milk, quantity, region.*

EFFECT OF SOME FACTORS ON THE BIOLOGICAL PROLIFICACY OF SHEEP FROM THE NORTH-EAST BULGARIAN MERINO BREED

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Abstract

The subject of the study were 617 sheep from the Northeast Bulgarian Fine-Fleece Sheep Breed (NBFF) - Shumen inter-breed type, born from 2013 to 2018 and bred in the Scientific Center for Agriculture - Targovishte. The biological prolificacy trait at different ages has been investigated. There were 1839 observations of biological prolificacy from the first to the fifth lambing. The influence of the factors - breeding line, type of mating and year of birth was researched. The variance was analyzed on the basis of a multifactorial linear statistical model for each study age (consecutive lambing). The linear affiliation has a significant effect on biological prolificacy up to the third lambing. The type of mating has a significant effect on biological prolificacy at first lambing only. Sheep from the line No. 61 with FecB gene from Booroola Merino are superior in prolificacy the purebred and the lines with Australian Merino genes up to 4.5 years. The biological prolificacy increaseed by the second lambing and was highest at 3.5 years (117%).

Key words*: breeding line, Northeast Bulgarian Fine-Fleece Breed (NEFF), prolificacy, sheep, type of mating, year of birth.*

EVALUATING THE CURRENT IMPROVEMENT STAGE OF THE PREDOMINANT SKINS MODELING OBTAINED FROM KARAKUL OF BOTOSANI BREED

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Abstract

The purpose of the research was to carry out a real analysis of the degree of improvement for the traits that influence the quality of skins obtained from Karakul of Botosani lambs. The biological material was represented by lambs of both sexes obtained from adult sheep belonging to the respective breed. In order to evaluate the improvement of the modeling degree, assessments were made on several generations of lambs, starting with those from 2007 when the current Improvement Program is applied, those from 2015, 2020 and respectively from 2022. The working methods used are accepted by the experimental technique and the evaluation of the type of model was made based on the technical norms and in which it is specified that 50 points are awarded for very good modeling; for good modeling, only 25 are assigned, and for situations in which the modeling is satisfactory, only 10 points are given. Following the statistical processing of the data, it is found that the improvement process is more advanced in black variety lambs because an average score of 32.38 was obtained and from the total number of lambs evaluated in 2022, the proportion of those that were also associated with a valuable modeling was 66.8%.

Key words: *Botosani Karakul, color variety, pelts, skin.*

OPTIMIZATION OF THE SELECTION PLAN, FOR PRODUCTION AND REPRODUCTION TRAITS, IN THE MILK-PALAS SHEEP POPULATION

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Abstract

The purpose of this study is to optimize the selection plan for production and reproduction traits in the milk-Palas sheep population totally 486 sheep. The selection criterion is represented by an estimate of the global breeding value, calculated based on the BLP method. Among the four traits considered in terms of economic weights, the most important in the selection turned out to be prolificacy (55%), followed by the amount of milk (24%), the amount of fat (12%) and the amount of protein (9%). The greatest genetic progress per generation was obtained in the case of variant 5 (Milk + Fat + Protein + Prolificacy), the genetic gain being 7.6623 kg milk and of 0.0407 lambs/calving. Compared to the control variant (1), the total genetic gain increased by 102.8%. The next variant is variant 2 (Milk + Fat + Prolificacy), which practically ensures a genetic gain similar to variant 5, namely 102.7%. This result is explained by a higher genetic correlation between the amount of milk and the amount of fat (0.836) compared to the value of the correlation between the amount of milk and the amount of protein (0.441).

Key words*: correlation, fat, milk, production and reproduction traits, prolificacy, protein, selection indices.*

STUDY OF THE INFLUENCE OF LIVE MASS ON THE INDICATORS OF MILK PRODUCTIVITY OF HOLSTEIN COWS OF DIFFERENT ORIGINS

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Abstract

The article presents the results of studying the impact of live weight on the milk productivity of Holstein cows of various origins after the first completed lactation in three breeding herds. To assess the influence of live weight on the productive traits of cows, the analyzed population in all herds was divided into three groups. Cows with a live weight up to 600 kg (Group I) and from 606-630 kg (Group II) in the herd of SLL "Gomers Efrem" positively correlated with milk yield and the amount of milk fat. In SLL "Dastocom," a positive moderate correlation (live weight - 305-day yield) was identified at cows of the first lactation of German selection up to 600 kg (Group I) (r = 0.448), and with an increase in live weight, the correlation coefficient acquired a negative value. In the breeding herd of SLL "Total Gnatyuk," an advantage was found in favor of locally generated cows by 537 and 302 kg for French and Dutch breeds, respectively, with no significant differences observed.

Key words: *first lactation, live weight, milk yield, fat content, correlation.*

MILK PRODUCTIVITY AND BREEDING-GENETIC PARAMETERS OF ECONOMICALLY VALUABLE TRAITS OF HOLSTEIN COWS OF FRENCH SELECTION

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Abstract

The article presents the results on the study of key economically beneficial traits of pedigree French Holstein cows in the herd of Society of limited liability "Holstein." It was found that the milk yield of cows in the first lactation averaged 8119 kg of milk, and in the second lactation, it was 8226 kg of milk, which is by 107 kg more than in the first lactation. Comparative analysis of the milk productivity of locally generated cows and their mothers revealed that the daughters' yields (cows of local generation) during the first lactation period of 305 days exceeded the mothers' yields by 1367 kg of milk. In the second lactation, the average yield of locally generated cows was 8505 kg of milk, which is by1253 kg more than the average in the first lactation. A positive correlation was established for milk yield during the 305-day lactation period between the first and second lactations (+0.201). The heritability coefficient for lactation yield was determined to be ($h^2 = 0.402$).

Key words*: correlation, heritability coefficient, Holstein breed of French selection, lactation, local generation.*

ESTIMATION THE GENETIC PARAMETERS FOR GROWTH TRAITS IN ABERDEEN ANGUS BREED

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Abstract

The objective of this study was to estimate the breeding values and genetic parameters for birth weight and weaning weight in Aberdeen Angus cattle breed with maternal animal model. Data consisted of records of 1206 calves of Aberdeen Angus breed from Aberdeen Angus Association Romania. The direct breeding values for birth weight were in the population between -12.8 and 21.93 and for weaning weight from -82.68 to 155.10. The direct breeding values for calves with records for birth weight were from -8.87 to 16.077 and for weaning weight from -71.51 to 150.26. The maternal breeding value for birth weight ranged between -2.772 and 3.388 and for weaning weight from -38.273 and 49.693 in the population. The maternal breeding values for calves with records for birth weight ranged between -2.206 and 1.668 and for weaning weight were from -25.824 and 27.906. The direct heritability for birth weight was 0.266 and for weaning weight was 0.217. The maternal heritability was 0.048 for birth weight and 0.081 for weaning weight. The total heritability was 0.24 for birth weight and 0.20 for weaning weight.

Key words*: breeding value, genetic parameters, maternal animal model.*

STUDY OF THE ASSOCIATION FOR SUSCEPTIBILITY TO SCRAPIE WITH INFLUENCE ON PRODUCTIVE PERFORMANCE IN THE KARAKUL SHEEP BREED

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Abstract

Scrapie, a transmissible spongiform encephalopathy, is known to be influenced by certain PRNP genotypes, and some research has shown that these genotypes can impact the productive performance of affected sheep populations. The study was conducted on Karakul sheep populations. The main aim of this work was the analysis between PRNP genotypes and productive characters (body weight, coat color etc.). Based on the breeding values, the retention of the most valuable individuals for reproduction is to be carried out according to the desired proportion of retentions. From the data analyzed, no unfavorable association was observed between the ARR allele, type, or reproductive traits. It is important to assess the wider context in which numerous variables interact to influence the productive performance of sheep populations. More studies are needed to better understand the complexities of this connection.

Key words*: genotype, improvement, productive performance, scrapie susceptibility.*

FEEDING AND MEAT QUALITIES OF YOUNG PIGS OF DIFFERENT INTENSITY OF FORMATION IN EARLY ONTOGENESIS AND THE LEVEL OF THEIR PHENOTYPICAL CONSOLIDATION

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Abstract

Taking into account the intrabreed differentiation of animals of the large white breed according to the `intensity of formation` index, it was established that the young pigs of the experimental group I (Δt = 0.935-1.087 points) prevailed over peers of the II (Δt = 0.728-0.912 points), III groups (Δt = 0.618-0.707 points) according to the average daily gain of live weight, the age of reaching live weight of 100 kg and Tyler B.`s index by an average of 2.31%. Young pigs of the III experimental group, compared to those of the same age as II and I, are characterized by a smaller thickness of lard at the level of 6-7 thoracic vertebrae, a longer length of the chilled carcass, and the length of the bacon half of the chilled half of the carcass. Coefficients of phenotypic consolidation of growth traits, fattening, and meat qualities of young animals of different interbreed differentiation according to the `intensity of formation` index range from -0.263 to +0.569.

Key words*: correlation, fattening and meat qualities, intensity of formation, ontogenesis, variability, young pigs.*

MICROSATELLITE DIVERSITY IN *Bos taurus*, *Equus caballus* AND *Gallus domesticus* BREEDS REARED IN UKRAINE

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Abstract

This study is dedicated to the comparative analysis of the main parameters of microsatellite variability in the populations of animals from different taxa (Bos taurus, Equus caballus, and Gallus domesticus) of different breeds, reared in Ukraine. To investigate microsatellite variability, the following SSR-markers were used: for Bos taurus – TGLA126, TGLA122, INRA023, ETH003, ETH225, BM1824, TGLA227, BM2113, ETH10 and SPS115; for Equus caballus – HTG04, HMS06, AHT04, ASB23, HTG07, HTG06, CA425, VHL20, HMS03, HMS07 and ASB17; for Gallus domesticus – ADL0268, ADL0278, MCW0248, LEI0094 and MCW0216. The results of analyzing the parameter of the average number of alleles per locus (A) were used to determine their least amount in Gallus domesticus (6.56) and the highest one – in Equus caballus (10.76). The observed data are in agreement with the standardization procedure results, based on the rarefaction analysis on the level of 25 animals for each specific species of animals. The highest values of the total genetic diversity (uHe) were notable for Bos taurus (0.835), and the lowest ones – for Gallus domesticus (0.690). These results were confirmed by the Shannon's index values (1.940 for Bos taurus, 1.886 for Equus caballus and 1.420 for Gallus domesticus) as well as by the number of effective alleles (6.166; 5.614 and 3.848, respectively). The value of genetic subdivision (differentiation) according to Fst values fluctuated depending on the taxon and amounted to 0.119 for Gallus domesticus; 0.043 for Equus caballus and 0.03 for Bos taurus. Genetic differentiation between the populations, evaluated by the analysis of molecular variance (AMOVA), was in the range from 3 to 14% for different taxa.

Key words**:** *diversity, local breeds, microsatellite, polymorphism, population.*

RESEARCH ON CURRENT TRENDS IN BREEDING KARAKUL OF BOTOSANI SHEEP - BLACK AND GREYISH LINE

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Abstract

Taking into account the decreasing trend in skin production, Karakul of Botoșani sheep breeders have reoriented towards meat production, as the demand for this production is increasing, both in the country and for export, Karakul of Botosani sheep meat being highly appreciated in Arab countries. We want to capture the effect of increased meat production on the quality of the curl, which influences the commercial value of the skin. We will analyze the productive capacity of the Karakul of Botosani breed for both skin production and meat production, and the relationship between them, knowing that when you want to improve one production, you do it at the expense of another, for example improved milk production leads to a lower meat production, or a higher milk production leads to a decrease in milk fat percentage, if we are talking about major changes in the productions, because small changes, or changes up to a certain threshold, called limits of productions, do not have major effects on the other productions.

Key words*: body weight, Karakul of Botosani, production sheep, pelts.*

SESSION
NUTRITION

INFLUENCE OF ENERGY BALANCE OF RATIONS ON MILK PRODUCTION IN COWS IN A PASTURE-BASED FEEDING SYSTEM

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Abstract

This study aimed to achieve the optimal energy balance of Holstein-Friesian cows, fed to produce 5000-6000 l of milk/cow per lactation (restricted production- Pr) on a pasture ration or 8000-9000 l of milk /cow per lactation (high production- Pm), on a more intensive feeding regimen using a partial mixed ration (pasture + concentrate). The mean of 4% fat-corrected milk (FCM) and standard deviation was 8,646 ± 1,162 L/cow per lactation for the Pm herd and 6,847 ± 787 l/cow per lactation for the Pr herd. In the first period of lactation, the balance degree estimated negative energy was lower in Pm cows than in Pr cows (-16.1 vs. -29.1 MJ/cow per day, respectively). As such, mobilization of body reserves was also lower in Pm cows, and this was reflected in lower concentrations of nonesterified fatty acids (0.7 vs. 0.8 mmol/L) and β-hydroxybutyrate (0.5 vs .0.7 mmol/L) and higher concentrations of glucose (3.5 vs. 3.3 mmol/L) and insulin for Pm and cows respectively, Pr.

Key words*: body reserve, fatt corrected milk, lactation, pasture, ration.*

EFFECT OF FEEDING WITH FROZEN AND DRIED POLLEN ON THE DEVELOPMENT OF BEE COLONIES

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Abstract

This study aimed to examine the impact of feeding with frozen and dried pollen on the development of bee colonies (Apis mellifera L.). The study monitored changes in the strength of the bee colonies (SBC), the amount of sealed worker bee brood (SWBB), and food reserves (honey and pollen) before and after feeding during the Autumn and Spring periods. The experiment was conducted with one control group (CG) and two experimental groups - two bee colonies fed with frozen pollen (GFFP) and two bee colonies fed with dried pollen (GFDP). The results showed that during the Spring period, the SBC fed with frozen pollen was 36.52% higher than the SBC of the CG. For the same period, a higher value of the amount of pollen and the amount of SWBB was also observed in the GFFP compared to its value in the CG. In the Autumn period, the amount of brood in GFDP was 51.20% more than in the CG. In the GFFP, a greater amount of brood was also found compared to the CG, with the difference being 48.30%.

Key words*: Apis mellifera L., development of bee colonies, feeding, frozen and dried pollen.*

INFLUENCE OF FROZEN AND DRIED POLLEN FEEDING ON FAT BODY DEVELOPMENT IN WORKER BEES (*Apis mellifera* L.)

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Abstract

The study presents the influence of frozen and dried pollen feeding on the fat body development (FBD) of worker bees (Apis mellifera L.). The degree of FBD was determined before and after feeding during the Autumn and Spring periods. During Autumn, the highest percentage of bees (42.9%) with a second degree of FBD was found after feeding with dried pollen. During the same period, 38.1% of bees fed in this way were observed to have reached the third degree of FBD, and 19.0% of bees had reached the fourth degree of FBD. After completion of spring feeding with dried pollen, the highest percentage of bees (58.6%) with the fourth degree of FBD was reported. This percentage was significantly higher than the percentage before feeding (30.8%), with a difference of 27.8%. A significant increase in the percentage of bees (11.1%) fed with frozen pollen with the fifth degree of FBD was recorded for this period. The high degree of FBD of the worker bees indicates the greater effect of frozen pollen feeding compared to dried pollen feeding during the spring period.

Key words*: Apis mellifera L., fat body, feeding, frozen and dried pollen, honey bees.*

ASSESSMENT OF THE ANTIOXIDANT AND ANTIBACTERIAL POTENTIAL OF SOME PROPOLIS-BASED NATURAL PRODUCTS

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Abstract

Propolis has been used for centuries as a medical remedy in both humans and animals. Propolis can be found as a single basic product or as an additional compound in standardized drug formulations. The present research aimed to assess the antioxidant and antibacterial activity of four propolis-based natural products. The investigations were carried out on the following products: a propolis tincture; an aqueous propolis extract; an aqueous propolis extract with colloidal silver; and an ointment consisting of propolis, olive oil, and propolis wax. According to the obtained results, of the four products, the ointment showed the highest antioxidant activity. A higher antibacterial potential has also been demonstrated by the ointment compared to the other investigated formulas.

Key words*: antibacterial, antioxidant, propolis-based products.*

THE USE OF PUMPKIN SEED CAKE IN THE DIETS OF FATTENING PIGS

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Abstract

The work presents the results of a study on the chemical composition of pumpkin seed cake with shell and its potential use in the feeding of fattening piglets. It was established that including pumpkin seed cake in the diets of meat hybrids at proportions of 4%/t and 7%/t of combined fodder did not have a negative impact on health, productive performance, carcass quality, and economic indicators. Tests showed that substituting soybean meal with pumpkin seed cake at a rate of 4%/t in the first fattening period and 7%/t of combined fodder in the second period provides an average daily growth increase of 789 g, with a slaughter yield (hot carcass weight) of 80.53%, average backfat thickness at the 6/7 thoracic vertebra of 29.33 mm, 23.00 mm at the spine, 18.67 mm at the rump, eye muscle area of 42.69 cm², ham weight of 11.763 kg, and fat content in the Longissimus dorsi muscle of 4.53%, provided an economic benefit of 10.62 euros for each raised and fattened head.

Key words*: carcass, nutritional value, pumpkin seed cake, productive indices, slaughter yield.*

EFFECTS OF THE DIETARY FLAXSEED AND ALFALFA ON THE ORGANOLEPTIC QUALITIES OF THE BROILERS' MEAT

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Abstract

Due to the customers` desire to improve their healthy diet enriched in Omega-3, researchers included ingredients such as flaxseed in poultry feed. The study was conducted on a commercial farm to compare the organoleptic qualities of broilers' meat using dietary flaxseed and alfalfa. The broilers (44.000 heads) divided into two groups (C, E) were fed with compound feed containing 6% flaxseed + 2% alfalfa (growth phase) and 12% flaxseed + 2% alfalfa (finishing phase). At the end of the experiment, the organoleptic and physico-chemical (color and pH) meat parameters of breast and thigh were assessed for storage period (24, 48, 72 and 168 h). The results showed no significant differences ($p \geq 0.05$) concerning the pH of the thighs and breast, but significant differences ($p \leq 0.05$) were observed for all color parameters (L, a*, b*) within the storage period*group interaction. In conclusion, using combined dietary rich Omega-3 sources (flaxseed) and xanthophyll (alfalfa) contributes to meat quality enrichment by increasing the beneficial fatty acid concentration and meat color, important criteria in customer decision.*

Key words*: alfalfa, broiler, flaxseed, meat quality, pH.*

REVIEW ON THE INFLUENCE OF DAIRY CATTLE HEALTH EFFECTS ON GREENHOUSE GAS EMISSIONS

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Abstract

Climate changes represents a major threat to society, due to its wide impact on ecosystems, economy, human and animal health. The aim of this review was to evaluate the influence of dairy cattle health and their implications on greenhouse gas (GHG) emissions intensity. The main influencing factors concerning the GHG intensity of dairy cattle that are discussed in this review article are nutrition, animal productivity, longevity and fertility, in relationship with animal health. Data showed that high levels of animal health not only lead to increased productivity performances, however, it translates into a significant decrease of GHG emissions. Moreover, metabolic disorders during the transition period of lactating cows represent a critical risk for cows mortality, productivity and economical losses, and higher GHG emissions/kilogram/milk. Overall, the reductions in GHG emissions intensity could be achieved through the implementation of proper animal health management programs at individual farm level.

Key words*: animal nutrition, dairy cattle, greenhouse gas emissions, health, metabolic disorders.*

EFFECTS OF DIETARY OAK BARN ON PERFORMANCE TRAITS AND NITROGEN BALANCE IN LAYING HENS

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Abstract

This study aimed to evaluate the effectiveness of oak barn as a natural source of tannins included in low protein diets on the performance parameters, excreta composition, and nitrogen balance of laying hens. A total of 168 Lohmann Brown laying hens, 51 weeks of age, were divided into three dietary treatment groups and housed in digestibility cages. Laying hens were fed 17.5% crude protein (CP) in control 1 (C1), 15.5% CP in control 2 (C2), and 15.5% CP supplemented with 0.5 % oak barn in the experimental group (E). Dietary treatments registered a significant increase ($p = 0.001$) in laying production in the C2 and E groups, and a significant decrease in average egg weight ($p = 0.0002$) in the E group. The nitrogen balance assessment showed a significant decrease ($p = 0.0004$) of the nitrogen excreta in groups with reduced dietary protein (C2 and E) compared to control (C1). The cumulative effect of the two studied factors (oak bark and protein level) led to a reduction in nitrogen elimination through droppings of almost 33%, on average.

Key words*: nitrogen excreta, pollution, poultry, reduced dietary protein, tannins.*

PRELIMINARY STUDY REGARDING THE BIOLOGIC ACTIVITY OF SPICES

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Abstract

Cinnamon, cloves, and turmeric have long been valued as aromatics and components in oils and fragrances, and have been used as spices and remedies since ancient times. Ground spice is crucial in the food business for seasoning baked goods such as cakes, buns, biscuits, cookies, steaming puddings, pies, sweets, chewing gum, and desserts. However, the food business can benefit from the antioxidant activity of essential oils, for functional food production, with potential health claims. The paper aimed to evaluate the biologic activity (total phenolic content, the antioxidant activity and the antimicrobial effect) for the grounded and oil form of cinnamon, cloves, and turmeric. Among the evaluated spices, the grounded clove indicates the highest antioxidant activity ($p<0.05$), when compared with grounded cinnamon and turmeric. The value of the total phenolic content present in the grounded cloves oils was the highest (284.42±32.98 mg GAE/100 mL), when compared with cinnamon oil (100.43±9.85 mg GAE/100 mL), and turmeric oil (166.50 ±12.76 mg GAE/100 mL). The biologic activity of the spices suggests that in addition to imparting flavour to the food, they possess high potential as health promoters by their antioxidant effect, phenolic content and might be suitable for antimicrobial activity.

Key words*: evolution, milk production, NW Region, Romania, trends.*

RESEARCH ON THE IMPACT OF FEED TECHNOLOGIES ON THE WELFARE AND PRODUCTIVE PERFORMANCES OBTAINED IN ORGANIC FARMING OF SHEEP AND GOATS

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Abstract

The growth rate and productive performance of animals depends on various factors among which the feeding system is one of the most important factors. The nutritional needs of animals on organic farms can be covered through three sources: grazing, food produced within the own holding and the purchase of additional feed. The purpose of the work is to follow the effect of sheep and goat feeding technologies through the installation according to the requirements of ecological agriculture of cultivated pastures, which can be used both for animal grazing and for obtaining fodder, either dry or fermented. A maximum production of fodder obtained in one's own holding must be one of the main objectives of the breeder, so the selected crops must be determined according to the real needs of the holding. To achieve these goals, farmers who practice organic farming rely on recognized agricultural practices, such as maintaining the welfare and health of the animal herd through free-range systems and modern knowledge, such as monitoring nutrient levels to track the optimal growth of animals at different stages of development.

Key words*: leguminous fodder, milk production, organic farms, pasture, sheep and goats, welfare.*

CONTEMPORARY PERSPECTIVES ON THE COMPOSITION OF MILK FATTY ACIDS AND IMPLICATIONS FOR HUMAN HEALTH

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Abstract

In the past few years, there has been a notable rise in global demand for milk and dairy products. Milk fat represents an important component of milk, playing a crucial role in energy provision and contributing to numerous physical characteristics and manufacturing qualities of both milk and dairy products. The fatty acids found in milk fat are regarded as important nutritional components in the human diet. Generating milk with an increased concentration of polyunsaturated fatty acids (PUFAs), particularly from the n3 category, is advantageous because dietary patterns containing more n3 fatty acids and fewer n6 fatty acids are considered healthier for humans. There are numerous factors that influence the fatty acid in the milk profile, with nutrition being the most critical aspect among them. Primary dietary factors, including the type and quantity of either forages or concentrates within the dietary regimen, extensive research has been conducted on the balance between forage and concentrate ratios, as well as the inclusion of fat or oil supplements in diets.

Key words*: alternative food, dairy cattle, fatty acids, feeding, health.*

EFFECT OF INCORPORATING LEVEL OF MANGO (*Mangifera indica*) FEED AND BOILED MANGO SEED KERNEL AS PARTIAL SUBSTITUTES FOR MAIZE ON THE ZOOTECHNICAL PERFORMANCE OF BROILERS

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Abstract

With the aim of finding alternative substitutes for conventional energy sources in broiler feed in order to improve zootechnical performance and production feed costs, a study was carried to evaluate the effect of incorporating mango feed (Mangifera indica) and boiled mango seed kernel as partial substitutes for maize on the zootechnical performance of broilers. The present study was conducted between June and September 2023 in the vina department, Adamaoua Cameroon region. The study was carried out on a total 168 day-old chicks of the Cobb 500 strain which were completely randomized into four (4) batches of 42 birds each, corresponding to four (4) types of experimental diets. The results showed that, the incorporation of mango feed and boiled mango seed had no significant ($P>0.05$) effect on individual feed intake, average daily gain, feed conversion ratio and total live weight of broilers, independently of diets. The feed cost of producing one kg of live weight of broilers fell significantly ($p<0.05$) with the increasing level of incorporation of mango feed and mango seed kernel as substitutes for maize in the ration.

Key words*: broilers, mango feed, mango seed kernel, zootechnical performance.*

THE EFFECTS OF ALTERNARIOL MYCOTOXIN ON CELL CYCLE AND PROLIFERATION OF PORCINE BLOOD CELLS

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Abstract

Feed contaminants, especially mycotoxins are responsible for important economic loses in swine industry, pigs being very susceptible to contamination with mycotoxins. Alternariol (AOH) is a mycotoxin synthesised by fungi of genus Alternaria and is a common contaminant of different raw materials, as cereal and cereal products that represent important ingredients of swine diets. Recent literature data have shown that in human cell model, AOH can cause DNA damage and induce oxidative stress. However, the effect of AOH in swine it less documented. Consequently, the aim of our research was to investigate how AOH can affect the proliferation, apoptosis, death, and cell cycle using an in vitro model represented by PBMCs (peripheral blood mononuclear cells) isolated from pig`s blood. Cells were stimulated or not with phorbol 12-myristate13-acetate-ionomycin (PMAI), exposed for 4h to different concentrations of AOH (1-100 µg/ml). Our study shows that AOH was able to affect cell proliferation, apoptosis, cell death and cell cycle of porcine PBMCs, with negative effects on the animal health.

Key words*: alternariol, apoptosis, cell cycle, oxidative stress, pigs.*

EFFECT OF DIHYDROQUERCETIN ON PERFORMANCE, BACK FAT THICKNESS AND BLOOD BIOCHEMICAL INDICES IN FATTENING PIGS

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Abstract

The study aimed to investigate the effect of gradient levels of 100 mg and 200 mg dihydroquercetin DHQ/kg feed added on performance, back fat thickness, and blood biochemical indices in fattening pigs. An experiment with 30 pigs of the Danube White breed with an initial live weight of 66.3-66.5 kg and a final live weight of 100.9 - 102.8 kg, randomly assigned to three treatments - control(C), DHQ1 and DHQ2, was carried out. Pigs were housed individually for 43 days. At the end of the experiment, the thickness of the back fat was measured, and blood samples were taken. Biochemistry indices and fat metabolism indices were studied. Administration of dihydroquercetin did not affect parameters of pig performance in fattening period. The addition of two consecutive levels of DHQ increased MLT, measured in vivo, linearly (P = 0.025). The blood glucose content was linearly reduced (P<0.05). A statistically significant effect on high-density lipoproteins (HDL) in animals treated with 200 mg of DHQ (P = 0.012), having a high linear dependence (P = 0.007) was found, and a trend to reduce the content of triglycerides in the blood of fattening pigs.

Key words*: ADG, back fat thickness, biochemical indices, fat metabolism, dihydroquercetin, FCR, pigs.*

NONCONVENTIONAL RESOURCES FOR MONOGASTRIC FEEDING

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Abstract

Non-conventional feed resources (NCFR) as potential alternative feed ingredients for animal production continue to be a topic of great interest in recent years. As a promising solution for livestock feeding to reduce feed costs and ensure productivity and environmental sustainability with maximum efficiency, some of the potentially available NCFR are useful oilseed by-products. Some of them have a high nutritional value and contain several bioactive compounds (dietary fiber, essential oils, vitamins, minerals, polyphenols, etc.) which can promote the health and well-being of animals. However, the protein content, low energy level or the presence of some anti-nutritional factors can compromise its quality and restrict its use in animal feeding. Therefore, this paper reviews the nutritional value of three NCFR cold-pressed cakes, i.e., flax, hemp, and pumpkin) and the effects of their inclusion in monogastric diets (poultry and pigs), to provide a theoretical reference for their usefulness in the nutrition field.

Key words*: animal nutrition, cakes, flax, hemp, pumpkin.*

THE EFFECTS OF USING NATURAL PIGMENTS ON THE SHELF LIFE OF EGGS FROM ISA BROWN LAYERS

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Abstract

In this study, were examined the effects of two natural pigments, marigold flower and paprika, into laying hens' diet, for assessment the shelf life, lutein content, and yolk colour intensity. The research was carried out for 6 weeks period, on 37181 Isa Brown layers, divided into two groups. The Control group (C) was fed a standard diet, manufactured according to the nutritional guide of the hybrid, and the experimental (E) group received a diet supplemented with 0.05% marigold, and 0.02% paprika extracts. At the end of experiment, 180 eggs were collected to determine the stability over time of the lutein in the yolk and to evaluate the internal and external egg parameters from the samples kept at ± 4°C (60 eggs), respectively ± 20°C. A significant improvement in egg colour was founded (12.1 ± 0.6 vs. 10.8 ± 0.3), and can be correlated with the increased lutein concentration. In conclusion, adding these natural pigments sources to the diet of laying hens may be a useful strategy to enhance the nutritional value and yolk colour of eggs without compromising their quality or the safety for consumers.

Key words*: egg quality, lutein, marigold extract, paprika extract, yolk colour.*

THE INFLUENCE OF L-CARNITINE ON THE PRODUCTIVITY OF YOUNG RABBITS

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Abstract

In the studies, the bioadditive "CarnEon 50" was used, recommended for optimizing the intensive fattening of young monogastric animals to balance their ration with carnitine effectively. The research aimed to find out the effectiveness and safety of the use of a bio-additive as an element of intensive rabbit meat production. Research methods - zootechnical, laboratory, statistical. A compound feed recipe based on local feed ingredients was developed for intensive fattening of young rabbits of the newly created chinchilla-like type. It was established that the addition of "CarnEon 50" to the diet of fattening young rabbits in the amount of 150, 200 and 250 g/t increased their productivity at the age of 90 days, in particular, live weight - by 2.9-6.8%, average daily gains - by 4.2-10.5%, lifetime waist width (an indicator of meatiness) by - 3.04.5%, feed conversion improved by 2.5-3.9%. It is shown that the use of a bioadditive in the amount of 200-250 g/t of compound feed in the rations of young rabbits during intensive production of rabbit meat makes it possible to reduce direct costs for the production of 1 ton of rabbit meat by 20.94 USD and increase the profitability of production by 2%.

Key words: *bioadditive, fattening and slaughter indicators, intensive rabbit breeding, integrated assessment index, local fodder.*

EFFECT OF DRIED PROBIOTIC ON LIVER GLYCOGENOLYSIS PATHWAY THE END OF THE FINISHER PHASE OF HEAT STRESSED LAYING HENS

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Abstract

Homeothermic livestock such as laying hens have been widely developed and cultivated throughout Indonesia. This group of animals physiologically has a system that is able to maintain a normal body temperature range of 40-42°C. One of the strategies used to reduce the impact of heat stress is the provision of natural feed additives, namely probiotics containing a consortium of bacteria. An experiment was conducted on forty laying hens, which were kept in cages with heat stress. Probiotic feeding was done by dividing four groups of hens each. A probiotic level of 4% is the most effective level. This means that heat stress in laying hens can be overcome by giving probiotics. Probiotics have an important role in preventing changes in the osmotic pressure of body fluids, so that overall, they can overcome metabolic changes associated with heat stress.

Key words*: heat stress, laying hens, probiotics.*

EFFECTS OF DIETARY PROSO MILLET ON PERFORMANCE, PROTEIN PROFILE, NITROGEN BALANCE, AND GREENHOUSE GAS EMISSIONS OF GROWING PIGS

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Abstract

This study aims to evaluate the impact of 25% proso millet on growth performance, plasma protein profile, and nitrogen balance and to predict the releases of some greenhouse gas emissions (GES) from enteric fermentation and in the growing pig manure. During 21 days, two groups of 10 castrated male Topigs pigs with the same weight (30.48 ± 0.26 kg) and age (81 ± 3d) were fed: control (corn-triticale-soybean meal, C) or experimental (corn-proso millet-soybean meal, E). The animals were kept in metabolic cages. The GES calculation model was based on the IPCC (2016) approach, incorporating experimental parameters and prediction equations. During the analyzed period, the dietary treatment, increased ($P<0.05$) the growth parameters while the plasma protein profile was not significantly affected. In the E group, total nitrogen excretion (4.3%, $P<0.05$), and nitrogen digestibility (6.1%, $P<0.05$) increased while enteric CH_4, g Eq.CO_2 decreased (14.8%, $P<0.05$) vs. the C group.

Key words*: growing pigs, greenhouse gas emission, nitrogen balance, plasma protein profile, proso millet.*

AFLATOXINS OCCURRENCE AND LEVELS IN MAIZE FROM A ROMANIAN FEED MILL

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Abstract

The present study provides a two years overview of quantitative determination of total aflatoxin in maize from a Romanian feed mill. The aim of the study was to monitor the occurrence and levels of total aflatoxins in maize samples analyzed during the 2020 and 2021; maize used as raw material in the compound feed production was preleved for analyzes both in the raw material reception stage and from the unit's stock. To determine the aflatoxins concentration of maize from the reception stage, 1034 analysis were carried out in 2020 and 1191 analyzes in 2021. In order to assess aflatoxins occurrence and levels for deposited maize, were prelevated samples from the stock of the studied unit (48 samples in 2020 and 43 in 2021). Results showed that in 2020, from 1034 samples, 77.3% (n = 800) were positive, while in 2021, from 1191 samples, 57.9% were positive. For the determination of the total aflatoxin content of maize from the units stock, the incidence of positive samples was slightly higher in 2021 (65.1%), compared to year 2020 (56.2%). It can be concluded that it is important for feed mills to establish adequate control measures for mycotoxin contamination.

Key words*: aflatoxins, feed and food safety, feed mill, maize.*

EFFECTS OF PEAS (*Pisum sativum* L.) INCLUSION IN GROWER PIGS' DIETS AS ALTERNATIVE TO SOYBEAN MEAL ON PRODUCTIVE PERFORMANCES, BACKFAT AND MUSCLE THICKNESS PREDICTION

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Abstract

The primary concern of animal nutritionists is to find a suitable alternative for partially or entirely substitute soybean meal. Peas (Pisum Sativum L.) could be a viable option due to their availability and cost effectiveness. The aim of the study (45 days) was to evaluate the effects of different levels (0%, 10%, and 20%) of peas on nitrogen metabolism, performances, fat (RENCO Lean-Meater) and muscle thickness (Piglog) measured in vivo, on 8 pigs (crossbred barrows Topigs) assigned in three groups (C, E1 and E2), individually housed in metabolic cages. There were no statistical differences (p≥0.05) concerning the productive performances, although the E1 and E2 group registered a significant (p = 0.017) feed consumption compared to C group. The second backfat layer measured in the loin area was significantly different (p = 0.018) on E2 vs. E1 and C groups. The muscles thickness (mm) registered significant values (p = 0.045) for E1 and E2 compared to C group. Biological value (BV), net protein utilization (NPU) and nitrogen metabolism registered no significant differences (p≥0.05) between groups. The peas dietary inclusion at both 10 and 20% influenced the muscle thickness without negatively effects on performances.

Key words*: backfat, muscle thickness, nitrogen metabolism, peas, pigs.*

FORTIFICATION OF MULBERRY LEAVES WITH WHEY PROTEIN IN *Bombyx mori* SILKWORM - A REVIEW

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Abstract

Mulberry leaves are mainly used as feed for silkworm Bombyx mori L. (Lepidoptera: Bombycidae). This monophagous lepidopteran insect is economically crucial to the sericulture industry as it is essential for silk production in the world. Nutrition plays a vital role in sericulture; the nutritional value of mulberry leaves affects the quality and quantity of silk production. In recent years, research has focused on testing different alternative nutrients (i.e. proteins, carbohydrates, amino acids, vitamins), hormones, and antibiotics to enrich the mulberry leaves and improve silkworm productivity response. Whey, the major cheese production by-product, is a rich natural source of proteins (β-lactoglobulin, α-lactalbumin, bovine serum albumin, immunoglobulins and lactoferrin) and peptides with valuable nutritional, functional and bioactive properties. Additionally, whey contains other nutrients, i.e. lactose, fats, vitamins, and minerals. This review aims to provide the nutritional value and bioactive substances of whey as high-value-added protein sources and to summarise the effects of using mulberry leaves supplemented with whey protein on silkworm production traits and health.

Key words*: mulberry silkworm, whey protein, production traits.*

DETRIMENTAL EFFECTS OF LOW AND HIGH THERMAL STRESS ON LAYING HENS - A COMPREHENSIVE REVIEW

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Abstract

Understanding the impact of thermal stress (high vs low temperatures) on laying hens is crucial for preserving their health and optimizing performance in the poultry industry. Laying hens are particularly sensitive to drastic temperature changes, making thermal stress a significant challenge. Increased temperatures can negatively impact egg production, resulting in decreased laying rates and compromised egg quality, alterations in shell thickness as well as changes in protein and lipid content. Physiological changes, such as high respiratory frequency, body temperature, and corticosteroid levels, may manifest under high thermal stress. Additionally, high thermal stress increases the susceptibility of hens to diseases and infections. Conversely, low thermal stress can produce similar effects, affecting the metabolism of laying hens, disrupting essential nutrient absorption, and leading to respiratory infections and weight loss. Strategies aimed at alleviating thermal stress on the physiology, behavior, performance, welfare, and reproduction includes nutritional strategies, such as incorporating natural feed ingredients into diets and implementation of effective husbandry and management practices.

Key words*: behavior, hens, performances, physiology, thermal stress.*

THE FATTY ACID PROFILE OF BROILER CHICKEN MEAT THAT WAS FED VARYING LEVELS OF LAURIC ACID AND FEED FIBER

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Abstract

The aim of this research was to determine the effect of lauric acid supplementation with different levels of crude fiber in the diet on the fatty acid performance of chicken meat. 360 chickens of the Lohman strain were used within a Completely Randomized Design (CRD) with a 3 x 4 factorial pattern with 3 replications. Lauric acid levels were 1.3, 1.95, and 2.6%. Crude fiber content was 5, 6, 7, and 8%. The variables measured are: lauric acid content, saturated fatty acids, unsaturated fatty acids, omega-3, omega-6, omega-9, and the ratio of omega-3 to omega-6. At the age of 35 days, the chickens are slaughtered and the breast meat is taken and analyzed. The data were analyzed using the Minitab general linear model. The interaction between lauric acid and crude fiber content in the diet had a highly significant impact ($P<0.01$) on the fatty acid composition of broiler meat. It was concluded that the interaction between 2.6% lauric acid and 7% ration crude fiber content provided the best lauric acid, omega-3 content, and ratio of omega-3 to omega-6 in broiler chicken meat.

Key words*: lauric acid, feed fiber, fatty acids profile, broiler chicken meat.*

THE IDENTIFICATION OF THE EXTERNAL FACTORS THAT HAVE INFLUENCED THE PROGRESS OF A WEIGHT MANAGEMENT PROGRAMME IN A POPULATION OF DOGS

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Abstract

Raising awareness and educating dog owners about weight gain and the risk of obesity in their animals has become a priority for veterinarians and nutritionists. The prevalence of obesity in dogs in the United States and some European countries has been estimated to range from 30% to 70%. In the current research, external factors related to the animal, the owner and the family members of the investigated dogs were observed in relation to the implementation of nutritional programmes for excess weight management. Exogenous factors discussed included the physical activity level, environment and lifestyle of the animal, and the influence and behaviour of the owners and family members involved in the dog`s weight loss programme. The research highlights the importance of obese dog owners` awareness and acceptance of the need to implement and run nutritional weight management programmes to improve the health and well-being of the animal.

Key words*: weight loss, obesity, nutritional programmes, dogs.*

ASSESSING OF THE IMPACT OF HEMPSEED *JUBILEU* VARIETY ON PIG GROWTH PERFORMANCE, N METABOLISM, AND N_2O PREDICTION

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Abstract

Hempseed has an excellent antioxidant content and is a rich source of essential amino acids and n-3 fatty acids. The objective of this paper consists on evaluating the hempseed Jubileu variety effects on performance, nitrogen (N) balance. The prediction of nitrous oxide (N_2O) emissions was done as well. For 3 weeks of trial, a total of 15 pigs (39 kg ± 0.32) were randomly allocated individually in digestibility cages. Following a 7-day adaption period, there were two balancing periods where urine and feces were quantitatively collected. Two types of diet were used: Control group received a classical diet and Experimental group which received the same diet, supplemented with 5% hempseed. The growth parameter and carcass quality were not significantly altered by hempseed addition; however, a slight increased of ADG and feed conversion was noticed. Due to the significantly decreased of N concentration in the urine, TNO value was lower as well ($P<0.05$). A decline of N digestibility was noticed for HS diet group ($P<0.001$). Average value of N_2O estimated was lower in HS fed group ($P = 0.03$). In conclusion, hempseed is a proteo-oleaginous source, which can be added in pigs' diet with beneficial effect on performance, N metabolism indicators and N_2O emissions.

Key words*: digestibility, hempseed, nitrogen (N), nitrous oxide (N_2O), pigs.*

NUTRITIONAL STRATEGIES FOR LAYING HENS TO ADDRESS ENVIRONMENTAL CHALLENGES BY REDUCING THE NITROGEN EXCRETION

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Abstract

This research aimed to assess the impact of incorporating Castanea sativa powder into laying hens diets, examining reduced crude protein levels and their effects on production performance, health status, nutrients and mineral digestibility and environmental pollution by nitrogen (N) excretion and absorption. For that, a 6-week trial was developed, with 90 Lohmann Brown laying hens aged 51 weeks, raised in digestibility cages, divided into three groups with 30 hens each. The diets were composed as follows: a control group fed with 17.50% crude protein (CON), an experimental group with a reduced protein level of 15.50% (RPL), and a similar reduced protein group supplemented with 0.5% Castanea sativa powder (RPCs) as tannin supplement. The limiting amino acids (lysine, methionine, and threonine) were supplemented to maintain constant equal amino acid concentrations in all experimental diets. Throughout the trial, the laying intensity was higher in the RPCs group (94.12%), followed by RLP (93.65%) and CON (91.11%). However, the CON hens yielded heavier eggs compared to RPL and RPCs groups. Average daily feed intake and feed conversion ratio showed no significant differences among the groups. Health assessments from blood samples taken at the end of the trial showed a significant effect in monocytes, and uric acid among the groups with tendencies for leucocytes, lymphocytes, heterophiles. Notably, excreted nitrogen levels were significantly reduced (up to 30%) in experimental groups compared with the CON group, showing a promising way of reducing N pollution. On the other hand, the apparent absorption of protein was higher in the groups with lower levels of protein in the diet (RPL and RPCs) compared with CON group.

Key words*: Castanea sativa, health status, performances, poultry, protein levels, nitrogen balance.*

EFFECT OF DIETARY BILBERRY LEAVES AND SEA BUCKTHORN MEAL ON PERFORMANCE, CARCASS AND ORGANS DEVELOPMENT, BIOCHEMICAL PARAMETERS AND INTESTINAL MICROFLORA OF BROILER CHICKENS

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Abstract

To assess the impact of supplementing bilberry leaves (BL) and sea buckthorn meal (SBT) on growth performance, carcass and organs development, biochemical parameters and intestinal microflora, a number of 60 unsexed Cobb 500 broilers were allotted to 2 treatments with 6 replications of 5 birds each. The chickens were exposed at 32 ± 1°C (heat stress) for 42 days. The diets consist in a basal diet (C) and a basal diet with addition of 1% bilberry leaves and sea buckthorn meal (BL-SBT). The results showed that performance, carcass and organ development were not affected by the treatment. Serum glucose and cholesterol levels were lower in the experimental group than in the control group. The inclusion of BL-SBT decreased the E. coli number than the control diet. To conclude, feeding a combination of bilberry leaves and sea buckthorn meal under HS conditions could improve broiler health and intestinal microflora by regulating glucose and cholesterol and reducing the colonization of pathogenic bacteria.

Key words*: bilberry leaves, broiler chickens, performance, intestinal microflora, biochemical parameters.*

SESSION REPRODUCTION, PHYSIOLOGY, ANATOMY

MORPHOLOGICAL CHANGES OF EGGS AND REPRODUCTIVE ORGANS OF LAYING HENS WITH TRICHOMONIASIS

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Abstract

Egg productivity and morphological parameters of domestic laying hens eggs are an objective criterium of their well-being. Decreased egg production and egg defects may be the only sign of the latent course of trichomoniasis in poultry. We investigated the level of productivity and morphological indicators of eggs in the conditions of a mini poultry farm of laying hens with spontaneous trichomoniasis. It was found that 20% of hens stopped laying. Decrease in egg production by 29.16%, various defects in the texture of the shell (calcareous bumps, deformations, lack of a calcified layer) and the internal content of the egg (thinning of the protein part, presence of hemorrhages) were found in laying hens with preserved egg production. Severe forms of obstructive salpingitis and atrophic ovariitis with the absence of ovulatory follicles in the altered ovarium were diagnosed in poultry with cessation of egg production as a result of trichomoniasis infestation by post-mortem examination.

Key words: *egg defects, egg production, layer chickens, ovariitis, salpingitis, trichomoniasis.*

MILK YIELD AND PHYSICO-CHEMICAL COMPOSITION OF MILK OF ROMANOV SHEEP BREED RAISED IN THE FOOT-HILL AREAS OF BULGARIA

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Abstract

Romanov sheep breed was distributed in Europe more than 50 years ago. It is attracting more and more interest in Bulgaria because of its high fertility, but data on its milk productivity are scarce. The present study aims to determine the milk yield and physico-chemical composition of milk from Romanov sheep as it is the first of its kind in Bulgaria. 137 milk samples obtained from the 30th to the 120th day of lactation of 43 purebred Romanov ewes were analyzed. The average daily milk yield was 0.510 l, reaching 0.720 l as it gradually decreased during lactation. The milk yield for the studied period was 45.7 ± 3.52 l. The percentage content of milk fat increased with advancing lactation, as lactose showed insignificant changes. The protein indicator increased at the beginning, then it slowly decreased.

Key words*: milk yield, physicochemical composition, Romanov.*

THE REPRODUCTIVE PERFORMANCE OF COWS SPECIALIZED FOR MILK PRODUCTION IN THE PROCESS OF ADAPTATION TO NEW LIFE CONDITIONS

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Abstract

The reproductive performances (SP - service period, CI - calving interval, CCR - Reproductive capacity coefficient) of Jersey (Js), Holstein (HL) cow populations of French, Dutch and local selection were studied, in the period of adaptation to the new operating conditions. It was established that the most significant deviations from the optimal physiological value of SP and CI are found in the Js breed (SRL "Agro-Gogu") (+104.9 and +113.4 days) and in the local selection HL population, (SRL "Gomets Efrem") (+78.2 and 88.6 days). In the dynamics of lactation, the duration of SP and CI, regardless of the animal husbandry, but also of the breed, is far above the optimally allowed values. The most favorable results are attested to heifers first calving of the French HL breed. The CCR reached the maximum value in cows HL of local selection, from the second lactation, followed by the Js population. The analyzed data reveal that the adaptive response of the animals to the new conditions is very slow, with breed differences and intrabreed variability.

Key words*: adaptation, cows, imported animals, local selection population, reproductive performance.*

STUDY ON THE PHYSICOCHEMICAL PROFILE OF COLOSTRUM FROM ANGLO-NUBIAN GOATS 24 HOURS AFTER PARTURITION

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Abstract

The specific properties of colostrum make it an indispensable source of nutrients and passive immunity for newborns. Feeding kids with colostrum within the first hours after parturition is extremely important for their health and survival. The composition of colostrum in different animal species is not the same. There is also a difference in terms of interbreeding. The present study aims to monitor the changes in the physicochemical parameters of colostrum from Anglo-Nubian (AN) goats that occurred within the first 24 hours after parturition. The study was conducted in the goat farm of the RIMSA, Troyan, Bulgaria, and a total of 40 colostrum samples were obtained from clinically healthy AN goats. For the studied period of 24 hours, a reliable decrease of the studied parameters was reported: protein (14.21-7.79%), total solids (24.02-20.84%), solid-not-fat (19.21-12.93%), density (1.045-10.354 g/ml^3), acidity (32-21^{o}T) and Ca (0.254-0.1494 mg/%). In contrast, for the indicators, such as fat (5.32-8.37%), lactose (2.63-3.43%), and pH (6.24-6.31), an increase in the values was observed.

Key words*: Anglo-Nubian breed, colostrum, goats, physicochemical indicators.*

CHARACTERISTICS OF HOOF GROWTH AND WEAR OF BULGARIAN RHODOPEAN CATTLE RAISED ON MANURE AND PASTURE IN THE TROYAN REGION IN THE CENTRAL BALKAN MOUNTAIN

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Abstract

The study examined two groups of Bulgarian Rhodopean Cattle with differing genotypes, focusing on their hoof horn qualities and analyzing the effects of both internal and external factors on these traits. Employing a blend of visual, metric, anatomical, and topographical techniques, the research measured various aspects of the cows' hooves, including length, width, overall width, height, and the angle of the hooves on both the front and back legs. These measurements were taken during periods when the cows were housed in barns and while grazing in pastures. The study also calculated the hoof's weight-bearing surface in square centimeters and the ratio of the cow's live weight per unit area of this weight-bearing surface. Results indicated that for both genotypes, cows grazing in pastures had a higher weight-bearing area relative to their live weight. The research highlights the importance of cow mobility for their health, productivity, and longevity. A key finding is that the even growth of the hoof horn, which is crucial for the animal's well-being, depends on how the body weight is distributed across the limbs. Additionally, variations in hoof growth throughout different seasons were noted.

Key words*: angle, breed, growth, hoof horn, length, width.*

STUDY ON QUANTITATIVE INDICATORS OF RAWHIDE IN SELECTED BEEF COWS AND COMBINED CATTLE BREEDS

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Abstract

The structural changes made in the cattle breed composition during the last 30 years in Bulgaria, along with studies on milk and meat productivity, have required the study of hides as a strategic raw material for the light industry. The relative weight, percentage of hide from the live weight, size, surface area, and thickness in certain sections of cull cows excluded from breeding for various reasons, from the following breeds were studied: Limousin, Galloway, Normande cattle, Bulgarian Red Cattle. Significant breed differences were observed in the examined hide parameters. The best represented in the space, as a spread of the configuration, was the raw hides obtained from Normande cattle (498.29 dm^2), followed by Bulgarian Red Cattle (461.23 dm^2). The worst indicators were found in Galloway (388.75 dm^2) (p <005)

Key words: *cows, combined breeds, hide, thickness, surface area, weight.*

EFFECT OF DIFFERENT HORMONAL PROTOCOLS WITH TIMED ARTIFICIAL INSEMINATION ON CLINICAL SIGNS OF ESTRUS AND CONCEPTION RATES IN BULGARIAN MURRAH BUFFALOES

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Abstract

In buffaloes, synchronization is especially important because of the peculiarities of reproduction. Gestation was diagnosed sonographically 45 days after timed AI (TAI) in 133 buffalo cows and 75 heifers hormonally treated. The dispersion analyses included the factors-classes: protocol - PreSynch/OvSynch, OvSynch, OvSynch+PRID; clinical signs of estrus (CSE) - without CSE, sole patency of cervix, mucous discharge; age - heifers, cows; season - in and out of season. The results show that protocol has strongest effect on conception rates (CR) ($P \leq 0.01$), significantly lowest being that under PreSynch/OvSynch - 23.9%, compared to OvSynch (40.7%) and OvSynch+PRID (47.4%). In the heifers OvSynch+PRID and OvSynch show markedly higher results (50.0 and 52.9%), while in the buffalo cows with OvSynch CR is relatively low (38.3%). CSE is also significant ($P \leq 0.05$), the highest CR in the cases with mucus. The superiority of OvSynch+PRID finds expression in the highest incidence of full estrus (mucus) in the lactating buffaloes (70%) and especially in the heifers (82%). Especially OvSynch+PRID can be used for overcoming seasonal anestrus.

Key words: *buffaloes, conception rate, estrus signs, PRID, prostaglandin.*

THE EFFECT OF CLIMATE CHANGE ON THE REPRODUCTION SEASON OF THE KARAKUL OF BOTOȘANI BREED

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Abstract

Although climate change is a certainty in the current era, very few people are aware of the medium and long-term effects it may cause. Therefore, the purpose of this research was to assess the impact of climate change on the breeding season of Karakul of Botoșani ewes. The research relied on the analysis and interpretation of data concerning the time interval when the first ewes exhibited sexual heat and when over 50% of the total number of ewes assigned for mating were mounted, spanning each season between 2000 and 2022. The biological material studied consisted of a representative population of adult ewes belonging to the Botoșani Karakul sheep breed, located at the Research Station for Sheep and Goats Breeding, in Popăuți-Botoșani. The obtained data highlight that between 2000 and 2011, the first ewes were mounted at the end of August (when the temperature was around 15°C). For the reproduction seasons between 2011 and 2022, it is observed that the period in which the first ewes exhibit sexual cycles shifted towards the middle of September (when the temperature at 8 AM remained around 15°C). Moreover, the period when over 50% of ewes exhibited sexual cycles and accepted mating also shifted towards the latter part of September and the first half of October. Under these conditions, it can be said that the third heat cycle, in which the proportion of mounted ewes exceeded 95%, shifted towards the first half of November.

Key words*: climate change, Karakul, reproduction, sheep.*

MORPHOLOGICAL INDICATORS OF VISCERAL ORGANS OF THE SNAILS *Helix pomatia* AND *Helix aspersa* Muller UNDER THE ABIOTIC AND BIOTIC FACTORS` INFLUENCE

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Abstract

The microstructure of the stomach, intestines, hepatopancreas, kidneys, lungs, reproductive organs, and protein gland of two species of snails (Helix pomatia and Helix aspersa Muller) under the influence of abiotic (climatic) and biotic (parasite) factors was studied. In snails of the first group, the visceral organs had a typical structure. The parenchyma of the hepatopancreas, as the most vulnerable organ, is represented by glandular tubules and the system of excretory ducts that open into the intestinal cavity. Structural changes in the hepatopancreas and gonads were observed in snails of the second group, which were in the state of anabiosis under the influence of dry, hot weather. The helminthic invasion in the snails of the third experimental group caused necrosis of the hepatopancreas and replacement of the parenchyma of the gland with loose connective tissue.

Key words*: hepatopancreas, microstructure, snails.*

EFFECT OF *Chromoleana odorata* LEAF POWDER ON BIOCHEMICAL AND REPRODUCTION PARAMETERS IN JAPANESE QUAIL INTOXICATED WITH GLYPHOSATE

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Abstract

The study aimed to assess the effect of Chromoleana odorata leaf powder (COLP) on biochemical and production parameters in glyphosate-intoxicated Japanese quails. 120 quails of 35 days old were allocated to 12 batches of 10 birds. Four experimental diets corresponding to treatments and prepared as follows: T0 received the basal diet, while T1 was given the basal diet supplemented with COLP. T2 received the basal diet and was treated with glyphosate in drinking water at 655 mg/L, and T3 fed the basal diet + COLP + glyphosate at 655 mg/L. Each of these diets were randomly assigned to three batches and the study focused on parameters of growth, toxicity indicators, and reproduction. Findings showed that the different levels of COLP supplementation induced an improvement in growth and carcass parameters. COLP powder had a positive effect on reproduction, with an increase in egg-laying rate, and hatchability. The harmful effects of glyphosate could therefore be mitigated by the addition of C. odorata leaf powder.

Key words*: C. odorata, Japanese quail, Glyphosate, growth, reproduction, toxicity.*

CAUSES AND EFFECTS OF SUBCLINICAL ENDOMETRITIS ON THE REPRODUCTIVE PARAMETERS OF DAIRY COWS

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Abstract

The aim of this of this retrospective study was to determine that most suitable Polymorphonuclear leukocytes (PMNs) threshold for diagnosis of subclinical endometritis (SE), the causes of this disorder and its effect on subsequent reproductive parameters of Holstein Friesian cows. Uterine cytology was executed on 140 Holstein cows at 28-30 days postpartum (pp) to calculate the PMN cells. A threshold of 16% PMNs above which some of the reproductive parameters were significantly affected was used. The retained fetal membranes (Odds ratio; OR = 3.02) and metritis (OR = 4.92) were the causes for SE. subclinical endometritis and metabolic disorders (milk fever and ketosis) affected the resumption of pp cyclicity at 28-30 days in milk. Cows with SE were less likely to conceive after their artificial insemination (OR = 0.44 $p<0.05$) than cows without S.E., and needed more artificial inseminations to conceive (2.4 vs. 2.1.). A PMN threshold of 16% was good enough to detect SE at 28-30 days pp. the RFMs and metritis were causal factors for SE.

Key words*: causal factors, cytological endometritis, polymorphonuclear cells, reproductive parameters, subclinical endometritis.*

INFLUENCE OF WEATHER CONDITIONS IN THE COLD PERIOD OF YEAR ON THE MICROCLIMATE IN COWSHEDS AND MILK PRODUCTIVITY OF COWS

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Abstract

The influence of weather conditions during the cold period of year on microclimate parameters of cowsheds and on the milk productivity of cows kept in traditional tethered conditions in typical brick cowsheds with natural ventilation was determined. It was established that in the conditions of Ukraine the temperature in cowsheds during the cold period of the year significantly depends on: the number of cows in them ($r = 0.509$; $p = 0.018$); the number of livestock per unit volume of the cowshed ($r = 0.68$; $p = 0.001$); the area of ventilation holes ($r = 0.745$; $p<0.001$). The humidity inside the cowsheds is most dependent on the outdoors air humidity ($r = 0.514$; $p = 0.017$), as well as on the number of cows per unit volume of the cowshed ($r = 0.533$; $p = 0.013$). In the cold period of the year the most problematic from the point of view of comfort for animals are periods of severe frosts. When cows were kept on a tether in typical brick cowsheds with natural ventilation and walking areas, the correlation coefficients between gross milk yield and: the average temperature outdoors were in the range of $r = 0.625$-0.636 ($p<0.001$); atmospheric pressure – $r = –0.237...–0.276$ ($p\leq0.001$). A significant synchronicity of fluctuations in time of outdoor air temperature indicators and average milk yield per cow was established at periods of severe frosts: the decrease in daily milk yield due to frost reached 0.8-2.2 kg per day (up to 21%). Cluster analysis established that for the synchronous distribution of days of the cold period into groups (clusters) based on the average outdoors night air temperature (tv) and gross milk yield (valmol), it is expedient to distribute the sample into 3 gradations.

Key words: *cow, cowshed, cold weather, microclimate, milk yield.*

EFFECT OF SELECTION IN LIVE WEIGHT ON REPRODUCTIVE TRAITS OF LOCAL GERZE CHICKENS

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Abstract

This study was executed to determine the effect of selection in live weight on reproduction of chickens. A total 300 Turkish local Gerze chickens were used in the study. All chickens were individually weighed at 8 weeks of age. Heaviest 75% (225 chickens) were chosen and separated from the flock. The mean live weight of chosen birds was 404.34 gram at 8 weeks and significantly higher than unselected birds (359.29 gram; P<0.05). At 18 weeks of age, the chickens were weighed again. The selected group had reached 1068.92 grams while unselected chickens 1059.69 grams and the difference between them was insignificant. Age at first egg was 182 days for selected hens while 177.5 days for unselected hens. The mean egg weights of eggs produced until 40 weeks of age were 47.11 g and 46.76 g, respectively for selected and unselected groups.

Key words: *egg weight, Gerze Chicken, live weight, selection.*

THE INCIDENCE OF RABIES IN ANIMALS IN THE REPUBLIC OF MOLDOVA DEPENDING ON THE VACCINATION OF FOXES IN THE SYLVATIC ENVIRONMENT

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Abstract

The study presents the results of the research on the epidemiological situation of the rabies virus following the vaccination campaign of the fox population in the sylvatic environment in the last 5 years on the territory of the Republic of Moldova. Both in Europe and in the Republic of Moldova, Vulpes vulpes represents in the sylvatic environment the main vector of the spread of rabies in wild and domestic animal populations. In 2019-2023 in the Republic of Moldova were registered 12 species of animals that reacted positively to the rabies virus. The most frequent cases of rabies in animals were registered in cattle, dogs, foxes, cats and constituted 93.72% of the total number of registered cases (239). Following the start in 2020 of the fox vaccination campaign, there was observed a decrease in the incidence of rabies in 2021 by 74.73%, in 2022 by 85.71% and in 2023 by 76.92% compared to 2019. The obtained data demonstrate that the application of vaccine baits by air and land has led to the immunization of wild animals and the reduction of the sick animals number.

Key words*: animal biodiversity, rabies, red fox, vaccination.*

THE INFLUENCE OF POLYPHENOLS OF NETTLE EXTRACT (*Urtica dioica*) ON THE ANTIOXIDANT ACTIVITY IN THE BLOOD SERUM OF ROOSTERS

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Abstract

In conditions of intensification of growth and improvement of farm animals and birds, in order to maintain the immune status of the organism it is necessary to monitor the state of the body`s antioxidant system. The concentration of free radicals in the cells of the body can reach levels, at which the own antioxidant system is not able to deactivate the damaging agents, as a result of which oxidative stress can occur. Different remedies are used to correct oxidative stress, including natural and synthetic of various chemical nature, possessing antioxidant activity (AOA). The biochemical structure of vegetable origin remedies is close to the structure of metabolites of living organisms, which is conditioned by adaptation through evolution and correspondingly these remedies are more easily submit to the influence of fermentative systems, compared to synthetic analogues. In this way, the problem of researching and studying new opportunities and phytoprotective sources of natural antioxidants is currently being pursued. In this paper will be elucidated results about the influence of polyphenols extracted from nettle on the antioxidant activity in the blood serum of roosters.

Key words*: antioxidant activity, oxidative stress, polyphenols.*

THE INFLUENCE OF REPRODUCTION STAGE ON THE PHYSIOLOGICAL STATUS OF ROMANIAN SPOTTED CATTLE: CHANGES IN BLOOD BIOMARKERS

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Abstract

Hematological profiles are the most effective indicators of the health, physiological status and welfare of farm animals. During the stages of gestation in cows, changes in hematological profiles give us information about the animals` requirements for environmental and feed conditions. For this, we evaluated a population of Romanian spotted breed cows from Țagu, Bistrita-Năsăud County. Blood samples were collected 3 weeks after insemination, pre-parturition (2 weeks before parturition) and post-parturition (2 weeks after parturition). Hemograms [RBC x 1012/L; HGB (g/dL); HCT (%)] and erythrocyte indices [MCV (fL); MCH (pg); MCHC (g/dL) and erythrocyte distribution area [RDWc (fL)], leukograms (WBC x 109/L; LYM x 109/L; MID x 109/L; GRA x 109/L) and leukocyte formulas [NEU; EOS; BASS; LYM; MON (%)], respectively platelet profiles [PLT x 109/L; PCT (%); MPV (fL); PDWc (%)] were analyzed. The obtained results showed a good physiological status of the studied cows, even if there were variations in hematological, leukocyte and platelet parameters, depending on the different stages of gestation.

Key words*: cattle, gestation stages, hemogram, leukogram, platelet indices.*

HEMATOLOGICAL INVESTIGATIONS IN THE ȚURCANĂ SHEEP BREED, UNDER THE DIFFERENT PHYSIOLOGICAL STATUS

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Abstract

The hematological profile of sheep from the Țurcană breed was evaluated at different stages of gestation (3 weeks after insemination, 2 weeks pre-partum and 2 weeks post-partum). The blood samples were collected from a farm in Cuiesd-Brusturi, Bihor County and analyzed in the Hematology Laboratory of UASVM Cluj-Napoca. Changes were found in the following blood parameters: RBC (x 1012/L); HGB (g/dL); HCT (%). There were variations in erythrocyte indices [MCV (fL); MCH (pg); MCHC (g/dL)] and in the RDWc erythrocyte distribution area (%). The number of leukocytes (WBC x 109/L) also showed different values according to the phases of gestation. These variations in the total number of leukocytes fell within the standards of the species. The leukocyte formula was analyzed, both as number of agranulocytes and granulocytes, and as a percentage. The largest proportion was presented by lymphocytes (LYM) that had an increasing evolution during the investigations. Among granulocytes, only neutrophils (NEU %) were evaluated, basophils and eosinophils being below the detection limit. Platelets count (PLT x 109/L) and platelet indices [PCT (%); MPV (fL); PDWc (%)] were investigated.

Key words*: blood analyses, gestation, leucocyte formula, platelets, Romanian sheep.*

PRESENCE OF SUBCLINICAL MASTITIS AND ECONOMIC LOSSES: IN THE EXAMPLE OF THE SERBIAN SMALLHOLDER'S DAIRY FARMS FROM BULK TANK MILK

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Abstract

The present study aimed to determine the presence of subclinical mastitis based on the number of somatic cells and the quality of raw milk from bulk tank milk from 2020 to 2022, from 181 bulk tank milk samples collected from 2020 to 2022 from smallholder farms up to 20 cows. We also aimed to show economic losses in the price of milk every month due to a drop in milk quality. The average content of milk components was milk fat at 3.86%, protein at 3.25%, lactose at 4.65%, non-fat dry matter at 8.94% and the number of somatic cells was 339,536 cells/ml. Based on the number of somatic cells, subclinical or clinical mastitis is present in 29.3% of examined farms, based on the number of somatic cells exceeding 400.000 cells/ml in samples. Average economic losses calculated on a monthly basis (e.g. years production of 6000 l x 4 dinars/0.033 euros) are 24,000.00 dinars approximately about 200e on a years basis or (16.67 euros per cow/month), calculating for small farms due to destimulation due to the increased number of somatic cells in milk.

Key words: *bulk tank milk, cows, milk components, somatic cells, subclinical mastitis.*

SESSION TECHNOLOGIES OF ANIMAL HUSBANDRY

INFLUENCE OF FEEDING LEVEL ON THE REPRODUCTIVE CAPACITY OF HEIFERS OF THE ZNAMIANSKY TYPE OF POLISSYA BEEF BREED

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Abstract

The influence of different intensities of rearing heifers of the Znamenskaya type of Polissya beef cattle breed on their growth, development, and reproductive capacity was studied. The coefficients for determining the level of heifer feeding were developed and used: 1.75 - high; 1.57 - normal. It has been experimentally established that intensively reared heifers, compared to animals in the control group, reached the optimal live weight for mating of 384 kg much earlier. From birth to mating age, they consumed 17.2% less feed units and 15.7% less digestible protein. They had better reproductive performance, the age of fertile mating was 146 days shorter and fertility rates were 6% higher than in the control group. Intensively reared heifers were 4-5 months younger at fertile mating than animals in the control group, indicating their higher early maturity. Intensive heifer rearing shortens the period from birth to calving, reduces labour and rearing costs, and increases the reproductive capacity of animals.

Key words: *early maturity, intensive growing, Polissya beef breed, repair heifers, reproductive capacity.*

MORPHOSTRUCTURAL CHARACTERIZATION OF *Longissimus dorsi* MUSCLE TISSUE OF AUBRAC CATTLE

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Abstract

The purpose of this paper was to highlight the results of the morphostructural characterization of Longissimus dorsi muscle tissue of the Aubrac breed, exploited in Romania. The present research focused on a population of 38 cattle, including both males and females, raised in a semi-intensive farming system. Longitudinal measurements (major and minor diameter, mean, DM/Dm ratio, length) as well as transverse measurements (diameter, area) of muscle fibres were conducted, and the results were statistically interpreted. In terms of determining the length of muscle fibres in the longitudinal section, significant differences between genders are observed. In males, the large diameter recorded values of 77.17 µm, while in females, it was 64.73 µm. Regarding the determination of the area of muscle fibres in cross-sectional analysis, significant differences were noted between males and females (in males, it`s an average of 2226.83 µm$^2$, while in females it`s 1576.60 µm^2). This shows that in the Aubrac breed, the area of muscle fibres in meat content can vary by gender. In conclusion, longissimus dorsi muscle is particularly important and valuable in the beef industry.

Key words*: beef cattle, Longissimus dorsi, morphostructure, quality.*

MICROBIOLOGICAL AND HYGIENIC QUALITY OF AUBRAC CATTLE FRESH MEAT

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Abstract

This work aimed to investigate and evaluate the microbiological control of carcasses from Aubrac cattle, focusing on ensuring quality and food safety in the meat industry. In this research, three microbiological parameters were monitored: contamination with Salmonella, total bacterial count and contamination with Enterobacteriaceae. The sponge sampling method was employed, involving the wiping of a 100 cm^2 surface area with a template using sponges soaked in sterile diluted peptone. Sampling was carried out randomly from ten carcasses (males and females), selecting four areas with the highest contamination frequency from each carcass, resulting in a total surface area of 400 mm^2. Following the tests, it was seen that the samples did not contain any bacteria from the Salmonella genus or the Enterobacteriaceae family. In terms of the total number of bacteria, the highest microbial load was found in males (8.2 x 102 cfu/cm^2) on carcasses 2 and 5. Simultaneously, the lowest microbial load (6.0 x 102 cfu/cm^2) was recorded on carcass 4 from females. We can conclude that, based on the results, these values are below the accepted standard limit, indicating wholesome meat.

Key words*: beef carcass, food safety, microbiology.*

ANALYSIS OF THE MORPHO-PRODUCTIVE PARAMETERS OF R1 SHEEP RESULTING FROM THE CROSSING OF LOCAL SHEEP FROM THE NORTH-EASTERN AREA OF ROMANIA WITH AWASSI BREED

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Abstract

The aim of the present work was to analyse the morpho-productive parameters of the R1 sheep resulting from the crossing of the local sheep from the north-eastern area of the country with the Awassi breed. The results showed that compared to the milk production of Tsurcana breed during the milking period (120 days), the milked milk production of R1 sheep in the first lactation is higher by 17.30 kg, the differences being very significant (P<0.001). Following the analysis of the external morphological characteristics of the R1 sheep, it emerged that the only character specific to the Awassi breed that was transmitted in a higher percentage is the long and drooping ears (36.7%), the other characters being transmitted in a reduced percentage (3.3-16.7%). The reproductive indices showed the highest values in the case of R1 sheep (compared to the Tsurcana breed, the prolificacy is 28.6% higher, and the numerical productivity index is 41.4% higher). All these results recommend the improvement of local sheep from the north-eastern area of our country through crossbreeding with the Awassi breed up to the second generation of absorption.

Key words*: Awassi breed, crossing, local sheep, milk production, morpho-productive parameters, reproductive indices.*

EVALUATION OF THE HEALTH STATUS OF DAIRY COWS DURING A MYCOTOXIN SCREENING OF FEED IN A FARM FROM NORTH-EAST ROMANIA

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Abstract

The purpose of this study was to analyze the health status of dairy cows from a farm in Moldova. A total of 30 feed samples were analyzed from a mycotoxicological point of view, and 90 blood samples were collected from cattle of the BNR breed, which were biochemically analyzed to investigate the state of health. Adverse effects of mycotoxins are manifested in health, production, and reproduction in ruminants, especially dairy cows, and in the population. During the experimental period, regarding mycotoxin contamination of feed, the levels of mycotoxins investigated (AFL-T, FUM, and DON) did not exceed legal limits. From a biochemical point of view, the parameters that did not fall within the limits of the reference interval and showed a slight increase were represented by ALT, Gamma Gt, and urea. All cows involved in the study were apparently healthy at the time of sample collection, but the resulting biochemical analyses suggest possible mild liver disease (by increasing above the normal limits of the previously mentioned parameters).

Key words*: biochemical analyses, bovine serum, dairy cows, mycotoxins.*

HARMONIZING GLOBAL HEALTH - EXPLORING THE ROLES OF WAHIS, EMPRES-I AND ADIS IN ANIMAL HEALTH SURVEILLANCE AND RESEARCH

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Abstract

In an era where timely and reliable animal disease reporting is more critical than ever before, this research paper meticulously examines the pivotal global animal disease reporting systems - World animal health information system (WAHIS), Global Animal Disease Information System (EMPRES-i), and European Union animal disease Information system (ADIS). The study provides a systematic analysis of their distinct features, data management strategies, and visualization approaches, exploring their interconnectedness with national and international legislative frameworks. Amidst the evolving landscape of emerging zoonotic diseases with pandemic potential, this research sheds light on the roles of WAHIS, EMPRES-i, and ADIS in global animal health surveillance and research. The findings help to understand transboundary disease monitoring mechanisms within regulatory landscapes, fostering a harmonized approach to advancing global animal health.

Key words*: animal health, disease surveillance, information database, transboundary diseases.*

TOOLS FOR CARBON FOOTPRINT ESTIMATION OF ANIMAL PRODUCTION WITH APPLICABILITY IN RUMINANTS - REVIEW

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Abstract

The evolutionary adaptation of the ruminant to convert pasture to animal products may have been successful, but ruminant production has an unwanted by-product (greenhouse gases), that is detrimental to the environment. The greenhouse effect is a term used to highlight the contribution of certain emitted gases to the warming of the Earth`s atmosphere. The gases responsible for the greenhouse effect are: water, carbon dioxide, methane, ozone. Of the total GHG emissions in 2021, 10.7% were emitted by the agricultural sector. In developed countries, numerous research projects have been funded over time by which emission factors (of greenhouse gases) associated with various activities carried out at the level of a farm (e.g., feeding, manure management) or various influencing factors of them (e.g., the average temperature of the area). The present study aims to analyze characteristics of 19 carbon footprint estimation tools, developed and used all around the world, and to set the most suitable system for estimation on the ruminant farms level.

Key words*: ruminants, greenhouses gases, carbon footprint, estimation tool, emission factors.*

COMPARATIVE STUDY OF BIOLOGICAL AND TECHNOLOGICAL TRAITS IN *Bombyx mori* L. FED ARTIFICIAL FOOD AND ADDED PLANT EXTRACTS`

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Abstract

In the traditional way of growing Bombyx mori, larvae feed only on Mulberry leaves. With the application of artificial nutrition, it is possible to grow them in any season of the year, regardless of the external climatic conditions and the stage of development of the mulberry. In a series of our scientific studies, we added various plants to the food of the larvae as nutritional stimulants. In this scientific development, we will trace the influence of Thymus vulgaris L. and Mentha piperita L. The aim of this study is to add thyme and mint extracts to artificial food as plant stimulants and to monitor the most important biological and technological characteristics of silkworms and the resulting cocoons. Larvae accept artificial food and added extracts with great willingness. In the experimental groups, good results were observed in the larvae fed with artificial food and added thyme extract, and lower scores for those with meta.

Key words*: artificial feeding, Bombyx mori, larvae, Mentha piperita, plant extracts, Thymus vulgaris L.*

THE INFLUENCE OF MANAGEMENT PRACTICES ON MILK QUALITY IN A DAIRY CATTLE FARM

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Abstract

In order to provide an up-to-date perspective on farm management techniques, a survey was conducted in a dairy cattle farm to study the relationships between management practices, milk yield and quality. A number of 310 Holstein Friesian cows reared for milk production in a semintensive farming condition were taken into study. Over the course of a year, individual milk analyses were performed on CombiScope FTIR milk analyzer (Delta Instruments, Netherlands). Milk yield per milking session was recorded daily using the AfiMilk system (Kibbutz, Israel). The analysis and interpretation of the results were correlated with the numerous observations made directly on the farm. The average calculated content, per normal lactation, was 8887.79 kg of milk, 369.05 kg fat, and 306.06 kg protein. A strong, positive relationship between milk yield and fat content, which means that an increase or decrease in milk production results in a corresponding change in the amount of fat contained. The yearly average percent of fat was 3.99%, protein 3.32%, casein 27.75%, lactose 4.9%, SCC 195,900 cells/ml were obtained in the studied farm.

Key words*: dairy cattle, management analysis, milk quality, welfare.*

THE IMPACT OF INCREASED SOMATIC CELL COUNT ON COW MILK ACIDITY AND LACTOSE CONTENT

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Abstract

Milk quality is increasingly important for producers and consumers as it relates to processing, production, and price. The aim of the present study was to determine the relationship between somatic cells count, lactose content, and acidity of cow milk. A total number of 100 milk samples, from cows with mastitis were processed and analyzed. Increasing acidity and decreasing lactose content were correlated with an increased number of somatic cells in the collected milk samples. The lactose ratio decreased as the number of somatic cells in the milk increased, thus leading to an increase in the titratable acidity of the milk. It can be concluded that a higher number of somatic cells adversely affects milk quality and subsequently processing capacity. Lactose content and titratable acidity can be used as indicators as complimentary to monitor udder health and for early diagnosis of subclinical mastitis in milk cows.

Key words*: acidity, lactose, milk cow, number of somatic cells.*

RESEARCH ON THE METABOLIC PROFILE OF BUFFALO COWS FROM THE ROMANIAN BUFFALOES BREED, PRE AND POST-PARTUM

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Abstract

The present study aimed to monitor the changes in metabolic profile during the pre- and post-partum period of high milk producing buffalo cows and their relationship with herd management. The transition period is defined as the period from 3 weeks before calving to 3 weeks after calving. Among the factors that influence the metabolic profile of buffalo cows, the following were highlighted: nutrition, reproduction and climatic factors. This study was carried out on two batches of 10 buffaloes in different stages of the gestation period. The buffaloes benefited from the same fodder ration before going out to graze. After going out to the pasture, the animals taken in the study were fed only with grass from the natural pasture. Ante partum and post-partum blood samples were collected. The samples were analyzed biochemically. The results draw attention of the metabolic profile of the blood in evaluating the nutritional status of buffalo cows and ensuring good health in very demanding physiological conditions, in addition, they provide some indications that buffaloes are more resistant to metabolic disorders in the post-partum period.

Key words*: buffalo cows, metabolic profile, transition period.*

THE ASSESSMENT OF DAIRY COWS WELFARE IN A FARM FROM THE NORTH-EAST OF ROMANIA

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Abstract

The objective of this study is to present the findings of a welfare assessment conducted on dairy cows reared in an intensive farming system, in a farm from the north-east of Romania. The assessment utilized well-being indices outlined in the TIERWOHL-CHECK programe, which was designed for German farmers. The results of the assessment, particularly focusing on the body condition score (BCS) of RM and late-gestation period female cows, indicate elevated percentages of overweight cows, ranging from 30.77% to 37.5%. Additionally, the prevalence of lame animals was notably high (28%, surpassing the recommended threshold of 10%). These welfare indices serve as indicators of the extent to which optimal rearing conditions are maintained, and the findings underscore the necessity for prompt interventions to enhance various aspects such as the comfort of lying spaces, the quality of bedding, and certain housing conditions. These measures are imperative for improving the overall welfare of the animals in question.

Key words*: animal welfare, dairy cows, indices.*

COMPARATIVE RESEARCH BETWEEN PURE BREED KARAKUL AND MEAT CROSSBRED REGARDING THE FREQUENCY OF GENOTYPES AND PREDISPOSITION TO SCRAPIE

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Abstract

The present work aimed to genotyping sheep in order to know the predisposition to scrapie and take the necessary measures. The analyzed biological material was represented by 822 pure breed Karakul sheep and by 239 crossbred meat sheep obtained by crosses between females of the Karakul breed and males of the Palas meat line. The method of determining the genotypes of susceptible sheep to scrapie from biological samples, consists in the analysis of the coding region of the PRNP gene (exon 3) where there are three codons associated with the resistance to this disease. Purebred Karakul sheep which have the genotypes belonging to classes 1 and 2, with the highest resistance to scrapie, have the share of 25.70%, compared to crossbred meat sheep in which the share of genotypes for the mentioned classes was 58.70% (significant for $p<0.01$ and C.I = 95%). An increase in resistance to scrapie was found in crossbred meat sheep which proves that by practicing infusion crosses with disease-resistant breeds, we will be able to increase scrapie resistance in the case of purebred Karakul sheep.

Key words*: genotyping, Karakul, resistance, sheep, scrapie.*

THE IMPACT OF PRODUCTION SCALE ON PIGLET BIRTHWEIGHT AND SURVIVAL UNTIL WEANING: INSIGHTS FROM A ROMANIAN FIELD TRIAL

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Abstract

Piglet birth weight plays a vital role in determining their growth performance and productivity of the farming systems. Moreover, piglet birth weight could be also a predictor for piglet survival and subsequent growth. A negative impact of litter size on piglet birth weight has been acknowledged, as large litters have reduced average piglet birth weights and increased within-litter birth weight variation. Consequently, comprehending the elements that influence piglet birth weight can have substantial financial effects on swine farming. A large scale trial was performed in several Romania commercial farms in order to identify the implications of the size of the production system on the piglet birth weight, survival and growth to weaning. Analysis of the records seems to suggest that there is a high variability in this respect among farms with similar rearing conditions and genetics. However, the survival rate to weaning of the low birth weight piglets (LW < 1.3 kg) is low irrespective of the size of the farm. In contrast the high birth weight piglets (HW > 1.3 kg) seems to thrive in both large, small or medium size units.

Key words**:** *birth weight, commercial, farms, piglets, variability.*

STUDY REGARDING THE INFLUENCE OF THE AGE OF FIRST CALVING, PARITY, NEW-BORN WEIGHT AND CALVING SEASON ON DAILY GAIN OF CALVES GROWTH IN A FARM IN NORTH-EAST OF ROMANIA

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Abstract

The aim of the present study was to highlight the influence of the age of first calving, parity, new-born weight and calving season on the average daily gain. The biological material consists of Holstein calves reared in an intensive system. The data obtained from the measurements at 7 days and 30 days, were statistically processed with the help of Statistics Analysis of Variance and Covariance (SAVC) and SPSS 16.00 computer programs. Significant differences between batches ($p<0.05$) were observed at 7 days, between calves born by cows having second parity which has a mean with 0.300 g higher of daily gain than those calved by third parity cows. At 30 days, the daily gain mean value has significantly greater differences ($p<0.05$), been with 0.12 g/day higher in the case of calves born in winter compared to those born in summer and with 0.14 g/day compared to those calved in spring ($p<0.01$). In the case of calves studied for age at first calving and birth weight, there are no differences between the batches so, these factors not influencing their further development in the case of the considered periods.

Key words*: age at first calving (AFC), daily gain, Holstein, parity.*

RESEARCH ON THE INCIDENCE OF MASTITIS AND ITS INFLUENCE ON MILK PRODUCTION IN A HERD OF CATTLE

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Abstract

The purpose of this work was to study the incidence of mastitis and its influence on quantitative and qualitative milk production. The biological material was represented by two groups of lactating cows: healthy cows (40 heads) and sick cows (9 heads). The obtained data were systematized and processed statistically. In the conducted study, three types of mastitis were highlighted: serous, catarrhal and purulent. The percentage of 18% of cases of mastitis in total population studied, the catarrhal form predominated with 8%, the serous form with 6% and the purulent one with 4%. Average milk production was 4526.05 kg in healthy cows, compared to sick cows in which milk production was 2251.44 kg and the statistically significant difference for $p<0.01$ it was of 2274.61 kg of milk. Fat and protein content in sick cows case was also reduced, respectively 2.68% for fat and 2.58% for protein. Improving the rearing system, maintaining hygiene in the barn and especially respecting the hygiene of the udder are some of the measures that must be adopted to be able to avoid such unpleasant situations.

Key words*: cows, incidence, mastitis, milk, quantity, quality.*

THE EFFECT OF LACTATION STAGE ON THE COMPONENTS OF MILK, DURING THE GRAZING PERIOD, IN BUFFALOES COWS FROM THE ROMANIAN BUFFALO BREED

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Abstract

Currently, approximately 20.000 buffaloes are raised in Romania. The present study was carried out to observe the effect of lactation stage on the components of raw milk obtained from buffaloes of the Romanian Bubaline breed. 120 milk samples were collected during the morning and evening milking, during the grazing period, from 60 buffaloes in different stages and ranks of lactation. From the collected samples, the content of fat, protein, lactose, fat-free dry matter (NFD), and total dry matter (TU) were determined. The individual analysis of milk samples from buffaloes revealed significant differences in terms of the variation of these parameters, the research carried out revealed differences determined by the stage of lactation in the same reference season. Therefore, the results of the present research indicated that the stage of lactation, during the grazing season, significantly influences the chemical parameters of milk, regardless of the lactation rank.

Key words*: buffaloes, fodder, milk, lactation, pasture*

STUDY ON SEVERAL BODY DIMENSIONS OF HORSES FROM FURIOSO-NORTH STAR BREED

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Abstract

The research was conducted in 2022, on 89 horses; the studied breed was Furioso-North Star, from Rușețu Stud Farm, and 66 broodmares (from the 2001-2019 generations) and 23 stallions (from the 1999-2019 generations) were included in this analysis. Seven of these males have served as sires, while the other 16 were used for public breeding. The horses were assessed based on data obtained from standard measurements (height at the withers, heart girth, and cannon girth) performed during the annual ranking procedure. The results obtained regarding the height showed that it registered average values ranging between 161.29 ± 0.23 cm for broodmares and 161.43 ± 0.39 cm for stallions. The heart girth had average values of 183.73 ± 0.29 cm for broodmares and 185 ± 0.40 cm for stallions, while the cannon circumference had average values of 20.83 ± 0.1 cm for females and 21.52 ± 0.23 cm for males. Based on these results, it was observed that the studied group is homogeneous concerning all three analysed traits. The data obtained from the measurements are within the breed`s standard and justify the promotion/maintenance of these horses within the stud farm`s broodstock.

Key words*: broodmares, dimensions, horses, stud farm.*

EVALUATION OF ALTERNATIVE PORK PRODUCTION SYSTEMS ON PASTURE FROM A MULTIPLE PERSPECTIVE: WELFARE, ECONOMY, AND ENVIRONMENTAL PROTECTION

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Abstract

Integrated professional swine farms produce enormous amounts of manure, wich has become a source of environmental pollution. Diversification of production systems, encouragement of alternative exploitation on free land, which contributes to changes in growth and exploitation, lower socio-economic and environmental impact, production with reduced consumption of resources without loss of nutrients and conservation of biodiversity through sustainable development of areas, can be solutions that can reduce pollution. The measures proposed for implementation, to reduce the environmental risk, refer to methods and techniques of statistical filtering and spatial grouping based on the density of swine, well-being, the level of accessibility of food and fodder resources, the level of accessibility of meadows for own pork production and the level of environmental pollution according to nitrogen (N) and phosphorus (P) excretion.

Key words*: environmental risk, exploitation system evaluation, pasture, swine.*

QUANTIFICATION OF THE INFLUENCE OF THE TEMPERATURE - HUMIDITY INDEX (ITU) ON THE GROWTH OF BROILER CHICKENS IN AN EXTENSIVE SYSTEM (HOUSEHOLD)

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Abstract

Chicken meat is a valuable and essential food both on regular and festive menus. The aim of the paper is to establish practical measures and recommendations to be used by breeders to maximize economic efficiency. The paper traces the influence of the evolution of the temperature-humidity index (ITU) of the 45 days of the growth cycle in broiler households on welfare (health status) and growth performance (average daily gain). The simultaneous action of temperature and humidity on the thermoregulatory function of broilers, created a heightened thermal discomfort in each analyzed period. This discomfort was observed by decreasing the average daily gain, when the UTI values were very high (above 90%), or were low values (below 60%). For the spring period in Romania, the evolution of the growth rate of chickens in the household system is clearly economically satisfactory and has certain sustainability advantages in terms of feeding and waste recovery.

Key words**:** *average daily increase, sustainability of the activity, temperature-humidity index, well-being.*

REVIEW ON GENOMIC TESTING OF DAIRY COWS, IMPORTANCE AND ADVANTAGES

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Abstract

One of the main livestock productions is represented by the dairy sector. The progress made over time being significant, but constrained by a limiting factor, the interval between generations (5 years). An excellent tool that helps make progress by reducing the time period until performance is manifested is genomic testing. This provided the necessary means to constantly improve genetics in production, fitness and conformation of dairy cows. Through its implementation, important changes are occurring in this branch of animal husbandry. This paper aims to review the most important aspects regarding the genomic testing by analyzing a significant number of works on this topic Based on genomic testing, the farmer can take effective decisions about herd improvement, to verify parentage or to identify bacterial strains associated with particular disease outbreaks.

Key words*: dairy cows, genomic testing, milk production.*

THE INFLUENCE OF ALFALFA SEMI-SILAGE ADMINISTERED TO SHEEP MOTHERS IN LACTATING PERIOD ON GROWTH PERFORMANCES OF SUCKLING LAMBS

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Abstract

This study aimed to determine the influence of fodder type administered in two consecutive years (2022 and 2023) to sheep mothers in the lactating period on the growth performances of suckling lambs, to improve growth rate up to weaning. The lambs from Tsigai breed - rusty variety (209 lambs born in 2022 and 219 lambs born in 2023) were used in the experiment from lambing up to weaning. The fodder administered to the ewes-mothers had provided a nutritional value of 198 g DP and 12.75 MJ NEM (net energy milk) in 2022, the fodder consisting of concentrates (grain corn 50%; grain barley 50%) and hill hay, while the fodder administered in 2023 is consisting of alfalfa semi-silage, hill hay and concentrates (50% grain corn; 50% grain barley) and had provided 198 g DP and 14.75 MJ NEM. The alfalfa semi-silage had significantly influenced ($p<0.001$) the growth performances of lambs in 2023 compared to those born in 2022 regarding weaning weight (19.98 kg vs. 16.82 kg), total weight gain (15.71 kg vs 12.84 kg) and average daily gain (224.44 g vs. 183.49 g).

Key words*: alfalfa semi-silage, fodder, lamb, growth rate, Tsigai.*

EFFECT OF DIFFERENT COLOR LED LIGHTING IN INCUBATION ON HATCHING PERFORMANCE

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Abstract

Three different LED light colors were applied during Gerze local Turkish chicken egg incubation. Red, green, and white colors were used each containing 160 eggs for 18 days. Eggs were individually weighed at the onset of incubation and during transfer to the hatchery. Lighting was not applied in the hatchery and chicks were hatched in darkness. Total egg weight loss of incubation was 10.45%, 9.43% and 8.90% for red, green, and white led groups and the differences were significant (P<0.05). Fertility between light-color groups was insignificant. The red light group had the highest hatchability (82.64%) in fertile eggs, while the green and white groups had 81.72% and 67.67%, respectively. While the egg weight differences between light groups were insignificant; the highest chick weight was obtained in the green light group (P<0.05). The white LED color delayed the hatching time of the chicks. All hatched chicks were scored according to Pasgar Scoring. The scores of chicks were 9.68, 9.62, and 9.71 for the red, green, and white lighting groups' chicks.

Key words: *Gerze Chicken, Incubation, LED lighting, Pasgar Score.*

RESEARCH ON QUANTITATIVE APTITUDES IN THE DIRECTION OF MEAT PRODUCTION IN LAMBS FROM ȚURCANĂ AND ȚIGAIE BREEDS

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Abstract

This paper aims to quantify the quantitative performances to the production of meat of lambs from the main native sheep breeds, in relation to several influencing factors: breed, type of birth and sex of lambs. To evaluate the degree of body development of the lambs during the birth-weaning period (0-60 days), they were weighed at birth, at 30 days and at weaning (60 days). The study was completed by a phenotypic analysis of the aptitudes for meat production on the live animal carried out by the "Method of points" in the lambs after the completion of the experiment. The best results, in terms of quantitative parameters in meat production (average growth rate, total growth rate, weight at slaughter) were obtained by lambs of the Țigaie breed.

Key words*: breed, body weight, growth, lambs, type of birth.*

RESEARCH ON CHARACTERS CONSERVATION IN MOUNTAIN ECOTYPE QUEEN BEES

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Abstract

One of the objectives of selection programs in bees is the conservation of the gene pool. The mother-daughter replacement induces a decrease in the rate of loss of sex alleles and the viability of the offspring compared to the population in which the replacement is random. The experiment was carried out in the 2022-2023 bee season. Two queen-breeding colonies and ten drone-breeding colonies were selected. Ten queens were reared from each queen rearing colony. From each drone breeding family, the semen obtained from ten mature drones was collected and homogenized. Each queen was inseminated with the semen obtained by homogenization. Queens were introduced into orphaned colonies of equal strength. In the bees resulting from these colonies, morphological and behavioural characters were measured and compared with those of the parental population. According to the statistical results, the use of homogenized semen has the advantage of eliminating the variation in the strength of the colonies as compared to the naturally mated queens.

Key words*: breeding, colony strength, gene pool, homogenized semen.*

GLOBAL QUALITY OF POULTRY MEAT. PECULIARITIES OF POULTRY MEAT

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Abstract

Poultry meat, particularly chicken meat, is the most consumed type of meat globally. The United States is the largest producer of poultry meat, followed by Brazil and China. Chicken nutrition and handling have a significant impact on the quality of poultry meat. Factors such as genotype, rearing system, feeding, and handling influence the technological, sensory, and nutritional characteristics of chicken meat. The balance between productivity and quality is crucial, and producers should select chicken genotypes and apply measures to ensure optimal meat quality. This scientific study was conducted to show the level of overall quality of poultry meat correlated with various chicken genotypes, types of breeding systems, feeding of chickens and their handling. This article aims to analyze how these factors intervene in determining the quality of chicken meat and provide recommendations for optimizing it.

Key words*: meat quality, poultry meat, quality characteristics, rearing system.*

NUTRITIONAL QUALITY OF POULTRY MEAT ACCORDING TO BREEDING SYSTEMS

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Abstract

Poultry meat is an important source of protein, fats, vitamins and minerals for human nutrition. The nutritional quality of poultry meat is influenced by a number of factors, one of the most important of which is the breeding systems of birds. In this study, we compared the nutritional quality of poultry meat bred in conventional systems and alternative systems. We compared the content of proteins, fats, vitamins and minerals in poultry meat according to the breeding systems. The results showed that poultry meat bred in alternative systems generally has a better nutritional quality than poulter meat grown in conventional systems. Specifically, poultry meat grown in alternative systems has a lower fat content and a higher protein, vitamin and mineral content. These differences are due to the fact that birds bred in alternative systems have more space and a more varied diet, which leads to a reduction in fat storage and an increase in nutrient absorption.

Key words*: breeding system, fats, minerals, nutritional quality, poultry meat, protein, vitamins.*

EVALUATION OF SOME CHEMICAL COMPOUNDS IN *Foeniculum vulgare*, *Trigonella foenum-graecum*, AND *Cuminum cyminum* SEEDS AS POTENTIAL FOOD SUPPLEMENTS FOR COWS

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Abstract

The present study investigates the chemical composition of seeds from Foeniculum vulgare (fennel), Trigonella foenum-graecum (fenugreek), and Cuminum cyminum (cumin) to assess their suitability as food supplements for enhancing milk production in cows. The dry matter, ash content, total nitrogen, total carbon, protein and fiber levels were analyzed to provide comprehensive insights into the nutritional value of these seeds. The experiments in this study were all conducted in triplicate. Results were defined as mean values ± standard deviations. The results are part of a larger project and these findings are integral to the broader project, which aims to develop optimized dietary supplements for dairy cattle. Considering the essential role of nutrition in dairy cattle health and milk production, the identified nutritional components in these seeds hold promise for incorporating them into cattle diets.

Key words*: chemical composition, cow, galactogenic effect, medicinal plants, milk production.*

THE INFLUENCE OF THE SIZE OF THE PIG FARM ON THE PRODUCTIVITY OF PIGLETS AND THE EFFICIENCY OF THEIR BREEDING

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Abstract

The article investigated the productivity of Danish-bred piglets during rearing in small and medium-sized pig farms and large industrial complexes, as well as the effectiveness and components of rearing costs and the influence of pig farm size on them. In small pig farms, it was found that piglet survival rate during rearing was 0.24-0.45% higher and growth intensity was 3.15-5.46% higher during this period. The absolute gains were 0.59-2.50% higher and the weight of piglets at transition to fattening was 4.53-8.50% higher than in medium and large size farms, respectively. At the same time, animals in large farms had 4.15% lower birth weight, 3.17% absolute and 2.19% average daily gains and 1.60% lower weight of animals at transition to fattening compared to medium size farms. It has been shown that the most effective feed was used by animals reared in medium capacity farms. The feed cost per piglet was lowest for animals reared on medium-sized farms, 9.67% lower than for animals reared on small farms during this period, and 9.70% lower than for animals reared on large pig farms.

Key words: *cost price, feed conversion, growth, piglets, rearing.*

IMPACT OF WEATHER CHANGES ON BEE FAMILIES DEVELOPMENT AND PRODUCTION WITH SPECIAL REFERENCE TO TRANSYLVANIA AREA

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Abstract

Lately, there have been increasing efforts to stimulate the strategic role of the bees in biodiversity protection, in agriculture & horticulture. European Union (EU) has invested in the beekeeping sector in the last years by funding Farm to Fork strategy. The aim of this strategy is to protect them and preserve their contribution in sustainable environmental models. Biodiversity is decreasing by using intensive agriculture, chimization and automatization and consequently a decline in ecosystem services in many parts of the world, most representatives being pollination. Over the past three decades, there was an increasing in atmospheric temperature. Because of changes in plant flowering times patterns, the interaction between pollinators and their food sources is also affected. The challenges facing bee health have multiple sources, including poor nutrition due to less nectar source, heat stress resulting from global warming, agrochemicals used in agriculture, and pathogens becoming increasingly resistant to conventional treatments. However, thermal stress can negatively affect hive activity, which can affect foraging activity, immunocompetence, reproductive capacity, and the growth and development of bees. This, in turn, will affect pollination services and hive production overall.

Key words*: apicultural production, bees, bee development, climate change, Transylvania.*

ANALYSIS OF CASES OF DOG BITES IN STARGARD, POLAND

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Abstract

The aim of this study was to analyse dog bites (n = 213) in the area supervised by the County Veterinary Inspectorate in Stargard between 2018 and 2020. The proportion of dog bites was significantly higher in 2018 (44%; $p < 0.05$) and in the summer (36%; $p < 0.05$). Adults (84%) were bitten significantly more often ($p < 0.05$) than children (16%). Most frequently (56%; $p < 0.05$) the bite took place in the home or on the owner's property. The highest percentage of bites (39%) was characteristic of 0 to 4-year-old dogs ($p < 0.05$). The proportion of biting males (70%) was significantly higher ($p < 0.05$) than that of females (30%). Mixed-breed dogs (77%) predominated ($p < 0.05$). The highest percentage of bites (16%) was caused by the smallest dogs (below 10 kg of body weight; $p < 0.05$). The proportion of bites caused by vaccinated dogs (81%) was significantly higher than that for unvaccinated animals ($p < 0.05$). The problem of dog bites requires further investigation, since the large proportion of cases is not reported.

Key words: *cynology, bites, dog breeding.*

SMART TECHNOLOGIES AT LIVESTOCK FARMS

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Abstract

At the livestock farm level, smart technologies are used mainly for identifying and locating animals, monitoring them to assess welfare and body condition, assessing and predicting performance, health and reproductive status. Data obtained using various measuring devices (sensors), most often appropriately transformed and integrated, enable early detection of physiological events that routinely occur in the animal's life (estrus, upcoming parturition), as well as undesirable events, such as metabolic disorders and diseases (mainly of the udder and limbs). Also, constant monitoring of animals, resulting in the collection of large sets of data supports the genomic evaluation of the breeding values. Thanks to smart technologies, it is possible to assess the correctness of nutrition, the quality of pastures and the impact of animals on the environment, including the amount of greenhouse gas emissions, as well as to control the microclimate of livestock buildings and to predict the economic efficiency of production. Moreover, these technologies are used for ensuring the safety and quality of animal products in the chain from the producer to the consumer.

Key words*: livestock, monitoring, data sets, management, smart technologies.*

EPIDEMIOLOGY, DIAGNOSIS, TREATMENT, CONTROL AND ECONOMIC IMPACT OF TRICHINOSIS

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Abstract

Trichinosis is a disease caused by a nematode parasite of the genus Trichinella spp. This zoonosis has been a major public health problem in many countries. The main source of infection in our country is the domestic pig. It is contaminated by eating food scraps containing raw meat infested with Trichinella spp, eating rats, mice or their droppings or by contact with wild animals. Secondary sources of infection are wild boar and bear. Humans get sick after eating meat infested with larvae enclosed in muscle tissue, insufficiently cooked, curd, roast or smoked. The difficulty in establishing the diagnosis is due to the fact that this disease does not manifest itself clinically and does not present pathognomonic signs and the parasite and its larvae are not visible to the naked eye. The main diagnostic method is represented by the trichinelloscopic examination performed by the veterinarian from a sample of meat collected from certain areas, mainly from the diaphragmatic pillars. In humans, the clinical manifestations are represented by fever, diarrhea, muscle pain, facial edema, eye hemorrhages - retinal and subconjunctival and subungual. All organs, meat and by-products obtained from pigs infected with Trichinella spp. are forbidden to be consumed and are destroyed by burning.

Key words: *disease, pig, Trichinella spp., trichinosis.*

EPIDEMIOLOGY, DIAGNOSIS, TREATMENT, CONTROL AND ECONOMIC IMPACT OF BRUCELLOSIS

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Abstract

Brucellosis is an infectious disease produced by bacteria of the genus Brucella spp. This disease mainly affects cows, sheep and goats, pigs and dogs. It is a zoonosis in humans it can be transmitted by 4 species of Brucella: B. suis, B. abortus, B. canis si B. melitensis, the latter being the most virulent. In animals the disease has a higher frequency of transmission during birth or abortion this being possible due to the fact that the bacteria colonize in the pregnant uterus. Once in the external environment, bacteria can survive for a long time, especially in wet and cold conditions, thus being able to be ingested by other animals. Colonization of bacteria at the level of the udder causes milk contamination. Male sperm, blood, urine and faeces of sick animals are also sources of contamination. The disease is transmitted to humans through the consumption of unpasteurized or insufficiently pasteurized milk or dairy products, consumption of meat prepared thermally insufficient or by direct contact with the infected animals, bacteria that enter the body through wounds on the skin or mucous membranes. The people most exposed to infection with Brucella spp. are represented by veterinarians, workers in slaughterhouses or farms, microbiologists. Human-to-human transmission of this zoonosis has proven to be extremely rare, but nursing mothers can transmit the infection to their children.

Key words: *humans, Brucellosis, Burcella spp, zoonosis.*

THE HISTORY AND THE MORPHO-PRODUCTIVE CHARACTERS OF THE BROWN CATTLE BREEDS

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Abstract

The theories underlying the studies on the origin of the cattle breeds place the Brown breed in the Bos taurus brachyceros type, based on the craniological characters identified in cattle from the mountain area. Today, at European level, a distinction is made between Braunvieh (original Braun-Schwyz) and Brown Suiss. The Braunvieh breed, a breed with milk-meat skills, was formed in the canton of Schwyz in Switzerland, based on successive crosses between local cattle and those brought by the Burgundians, Germans and Romans, later spreading to many countries in Europe. The Brown Suiss breed, specialized breed for milk, was formed in America, based on cattle imports from Switzerland (1869 - the first imports). While the Brauvieh breed achieves milk production of approximately 6000 kg per lactation, with 4% fat and 3 .4% protein, the Brown Suiss breed, which has become a breeder for milk production, has achieved yields of over 10,000 kg of milk per lactation in the US. The proportion of beta casein type A2 (which gives better digestibility to milk) is much higher in the milk of these breeds compared to other breeds (over 80% in Brown Suiss compared to Holstein 62%).

Key words*: Braunvieh, Brown cattle breeds, origin, performance.*

INFLUENCE OF COMPLEX MICROBIAL PREPARATION ON PRODUCTIVITY AND CLINICAL HAEMATOLOGICAL STATUS OF RABBITS KITS

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Abstract

The research aimed to study the influence of a bioactive compex microbial product, obtained from yeast biomass from beer and wine industry wastes and residual cyanobacterial biomass (spirulina) after production of medicinal remedies, on the productive parameters, health and clinical haematological status of recently weaned rabbit kits. The experiment was carried out on 3 batches of 14 kits from weaning to about 80 days of age. The rabbits in two experimental groups were supplemented with proposed preparation at doses of 3.0 and 9.0 g per 1 kg of concentrated feed per day. The use of the complex microbial preparation in the daily ration has a beneficial effect on the rabbit kits, evidenced by the general health status of the animals, reduction in the number of leukocytes and lymphocytes in the blood and the increase in the number of segmented neutrophils.

Key words*: clinical haematological status, haematopoiesis, microbial preparation, productive parameters, rabbits.*

THE EFFECTIVENESS OF THE INFLUENCE ON THE EMISSION OF HARMFUL GASES FROM PIG MANURE DURING STORAGE IN LAGOONS THE ADDITION OF MINERAL FERTILIZERS

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Abstract

In the structure of the animal husbandry production, a prominent place belongs to the pig industry thanks to the valuable products and quick payback. However, when providing the population with food, a large amount of waste accumulates, which is not only a valuable organic fertilizer, but also a producer of environmental pollution, since gaseous air pollutants are emitted into the atmosphere during their decomposition. As a result of the conducted research, the effectiveness of the investigated mineral fertilizers - phosphorite flour and slaked lime in reducing the level of ammonia (NH_3), carbon dioxide (CO_2), methane (CH_4), nitrogen oxide (NO) and hydrogen sulfide (H_2S) emissions from pig manure at storing it in lagoons was established. In particular, it was established that the addition of phosphorite flour and slaked lime to the pig manure in lagoons contributes to lower emissions of gases (NH_3, CO_2, CH_4, NO, H_2S), respectively by 18.4-33.6% and 8.8-30.8%. At the same time as the emission of the studied gases decreases, mineral fertilizers provide a lower level of the pH, i.e. it shifts to the acidic side. Thus, the establishment of the effectiveness of the investigated mineral fertilizers on the reduction of emissions of harmful gases from pig manure during its storage in lagoons indicate the perspective of their use to prevent environmental pollution in the pig industry.

Key words: *harmful gases, mineral fertilizers, pig farming, pollution, waste.*

STUDY ON THE MANAGEMENT OF TECHNOLOGICAL FLOW IN BEEF CATTLE FARMS IN THE NORTH-EAST REGION OF MOLDOVA

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Abstract

This study investigates the management practices and technological processes within beef cattle farms in the Northeast region of Moldova, focusing on six distinct farms. Analyzing data from these farms, encompassing a total of 1838 cattle, revealed notable disparities in animal stock, labor force, and forage cultivation areas. Additionally, diverse housing systems, waste disposal methods, and breeding practices were identified. Noteworthy results include Farm F5's effective waste management strategies and Farm F6's adoption of advanced breeding techniques. These findings underscore the necessity of tailoring management approaches to individual farm contexts to optimize operational efficiency and productivity. By providing actionable insights, this research contributes to ongoing efforts aimed at improving beef cattle farming practices in the region and fostering sustainable agricultural development.

Key words*: Aberdeen Angus, bovine husbandry, livestock management.*

AMINO ACID AND MINERAL MILK COMPOSITION OF SOWS FED WITH A MIXTURE OF ESSENTIAL OILS

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Abstract

The aim of the work is to find out the influence of essential oils in the diets of sows during farrowing and lactation on the amino acid and mineral composition of milk. The whole milk of sows obtained on the 21st day of lactation was studied, an increase of 9.69% of milk protein in the mass fraction of animals of the experimental group was observed. The amino acid and mineral composition of milk improved. The content of essential amino acids in milk increased: lysine - by 13.18%, alanine - by 13.11%, threonine - by 7.14%, histidine - by 22.22% compared to the control group. In the milk of the research group, an increase in iron content by 13.13%, phosphorus and zinc by 8% and 3.48%, respectively, was noted. The piglets of the research group had a greater increase: on the fifth day of life, the live weight was 5.4% higher; on the 14th day - by 0.4 kg, or by 12.5%, and at weaning (on the 28th day) - by 0.5 kg, or by 6.6% compared to animals of the control group.

Key words*: amino acid composition, essential oils, lactation, milk, sows.*

RESEARCH ON THE EFFECT OF CROSSBREEDING PROLIFIC PALAS EWES WITH PALAS MEAT RAMS COMPARED TO PALAS MERINO BREED ON QUANTITATIVE AND QUALITATIVE MEAT PRODUCTION IN MALE LAMB FATTENING

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Abstract

The research was carried out within the Research and Development Institute for Sheep and Goat Breeding (R.D.I.S.G.B) Palas Constanta and aimed at testing the fattening performances of meat crossbreeds (Prolific Palas breed x Meat Palas breed) compared to contemporaries from the Palas Merino breed. The two batches were fattened intensively for a period of 73 days, using granulated fodder with a content of 88% dry matter, 2570 Kcal and 160g digestible protein/kg during fattening. The final body weight was higher by 5.89%, and the average daily gain achieved during the entire fattening period was 14.62% higher in meat crossbreeds compared to contemporaries from the Merino Palas breed. The specific consumption of nutrients was lower in the group of meat crossbreeds that consumed 12.75% less Kcal metabolized energy and respectively 11.03% less protein compared to Merino de Palas lambs. The slaughter yield was higher by 4.7 percentage points in the meat hybrid group. The tissue composition of the carcass was characterized by a higher content in muscle by 1.9 percentage points and lower in bones by 1.22 percentage points in the meat hybrid group compared to contemporaries from the Palas Merino breed. The carcasses of the crossbreeds fell entirely into the U_2 class (very good, low-fat carcasses) compared to those of the Palas Merino lambs which were classified into the R_2 class (good, low-fat carcasses). Researches have demonstrated the superiority of crossbred meat lambs compared to contemporaries from the Palas Merino breed).

Key words*: crossbreeds, Palas Merino, yield, sheep.*

THE BIOLOGICAL ROLE OF SHEEP AND COW MILK PROTEINS

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Abstract

The study of milk proteins from different animal species is essential for understanding their impact on human health and their potential in the food industry. This article examines the biological role of proteins found in sheep and cow milk, highlighting their unique contributions to human nutrition and disease prevention. Through a comparative analysis, we explore the specific protein profiles of these two types of milk, including amino acid composition, biological activities, and digestibility. By employing a methodology that integrates in vitro studies, clinical trials, and systematic literature reviews, we assessed the impact of these proteins on bone health, muscle development, and immune system regulation. Our findings reveal that, although sharing some essential nutritional properties, sheep and cow milk proteins exhibit marked differences in terms of immunomodulatory capabilities and the prevention of chronic diseases. Specifically, certain sheep milk proteins have shown superior potential in promoting gastrointestinal health and preventing inflammation. This article concludes on the importance of diversifying protein sources in the diet to fully leverage their health benefits, highlighting the potentially superior role of sheep milk in certain nutritional and therapeutic contexts. Our discoveries open new avenues for exploiting the unique properties of sheep and cow milk proteins, both for nutritional science and industrial applications.

Key words*: milk production, protein, cow, sheep, biological role.*

CASE STUDY ON THE ECONOMIC EFFICIENCY OF RAISING PALAS MERINO BREED IN A MODULE OF 100 SHEEP

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Abstract

This work aimed to carry out a case study in a module of 100 Merino de Palas sheep to establish to what extent this breed can be raised efficiently in farms and micro-farms in the geographical area occupied by the Romanian Plain. For this, the annual evolution of the herd of 100 sheep was carried out, regarding the entries into the flock, by age category and exits, the result obtained representing the basis of the analysis of the productivity of the module of 100 heads. The first criterion that reflects the efficiency indicator is the income from meat sales, the main marketed product being lamb meat, and the secondary one being meat from reformed sheep. The second efficiency criterion of the farm is the income from the exploitation of milk, and here the analysis focused on the production and processing of milk into cheeses. The farm is based on the sale of traditional products obtained from sheep's milk, such as cottage cheese and telemea cheese. The subsidy for the area of agricultural land owned and the number of animals in the farm was also taken into account. In order to calculate the economic efficiency, labor costs, medicines, feed costs, shelter costs, machinery costs, other costs generated by the process of growth, maintenance, transport and capitalization of production were analyzed. From the point of view of exploiting the economic potential of the breed, it was found that the Merinos de Palas breed has a good body development and a robust constitution being perfectly adapted to be raised in the plain area. The economic result of the module of 100 sheep from the Merino de Palas breed is very good, a fact that supports that this activity is profitable and can represent an occupation model for a young Romanian farmer. In conclusion, this approach constitutes a knowledge base through which it will be possible to move to a business model, starting from a module of 100 heads of sheep.

Key words*: economic efficiency, module, milk, meat, Merino sheep.*

RESEARCH ON THE USE OF MULBERRY VITROPLANTS IN ORDER TO PRACTICE A SUSTAINABLE AGRICULTURE

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Abstract

The conservation of sericultural vegetative genetic resources is a permanent concern in the sericulture field, being known that the mulberry leaf is the only source of food for the silkworm Bombyx mori L. These sericultural vegetal genetic resources are mainly used to obtain planting material used for establishment the mulberry plantations, but also for the mulberry improvement program and the establishing of the phytoremediation potential of mulberry plants. The research carried out for the preliminary testing in laboratory of in vitro multiplication potential of some mulberry varieties have highlighted the possibility of using the biotechnologies of tissue cultures, meristems and organs for testing the phytoremediation potential of mulberry plants with sericultural destination. Thus, a planting material was produced, consisting of mulberry vitroplants colonized with vesicular-arbuscular endomycorrhizae, which keep the genetic characteristics of parental forms, but present superior bioproductive parameters and physiological tolerance on soils contaminated with lead.

Key words*: mulberry, vesicular-arbuscular mycorrhizae, silkworm.*

THE INFLUENCE OF THE BREEDERS AGE OF THE GREY KARAKUL (RAMS OF DIFFERENT AGES X 5-YEAR-OLD EWES) ON THE BIRTH WEIGHT AND THE QUALITY OF THE LAMBS SKINS

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Abstract

This study is focused on the impact of parental age (rams of various ages mated with 5-year-old ewes) on the weight and quality of skins in Karakul lambs - Grey variety. The main objective was to analyze the effects of parental age on the weight and quality of lambs skins. Dates used come from the SCDI Popăuţi records, Botoșani county, Romania, and their analysis was conducted at the USAMV Bucharest. Research methods included weighting of the lambs immediately after their birth and evaluating the quality characteristics of the curl and other relevant traits in the first two days of their life. The results proved a variety of birth weights ranging from 3.18 to 5.05 kg, as well as a performance classified in the Record and Elite zootechnical class. The study's conclusions highlight that parental age plays a significant role in giving the weight and quality of lamb skins at birth.

Key words*: weight, curl, size, sheen, shade.*

SESSION TECHNOLOGIES OF THE AGRO FOOD PRODUCTS PROCESSING

FATTY ACID PROFILE AND QUALITATIVE EVALUATION OF THE FAT FRACTION IN WHITE BRINED CHEESE AT 24- HOURS OF PRODUCTION

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Abstract

The fatty acid composition of 24-hour white brined cheese produced from goat's milk from three groups of animals- Bulgarian White Dairy (BWD) breed and its crosses with Anglo-Nubian (BWDxAN) and Togenburg (BWDxTG) breeds during the lactation and the fatty acid composition of the milk fat of the product has been evaluated as a healthy source for human nutrition. Goat white brined cheese at the 24th hour after production, from the three groups of animals is characterized by a high level of saturated fatty acids from 75.52 g/100 g fat at BWD to 76.09 g/100 g fat at BWDxTG breed. MUFAs predominate in purebred goat cheese- 24.98 g per100 g fat and MUFA in the crosses of BWDxAN breed- 3.32 g/100 g fat. The lipid preventive score is highest in BWD cheese- 53.85 g per 100 g cheese, and the atherogenic and thrombogenic index in BWDxTG breed cheese respectively 2.60 and 2.71. The analysed cheeses at the 24th hour from three goat groups is defined as having low content of TFA according to Regulation (EC)No1924/2006.

Key words: *conjugated linoleic acid (CLA), fatty acids, goat cheese, indices.*

NATURAL INHIBITORS IN SOUS VIDE COOKING – A CRITICAL REVIEW

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Abstract

Sous vide (SV), a culinary technique that involves vacuum sealing food and cooking it at precise temperatures, has been celebrated for improving food's texture, flavor, and nutritional content. Integrating natural inhibitors is a crucial strategy for enhancing food safety, shelf life, and health benefits by fighting microbial growth. This review examines the combined effects of SV and natural inhibitors on various food types, including meats, seafood, and vegetables. It highlights significant progress in food safety, with natural additives helping to reduce pathogen resistance and curb bacterial spread, thus improving the overall safety and sensory appeal of meals. Moreover, it discusses the challenges and opportunities in refining the use of natural inhibitors in SV cooking, such as achieving the right balance between flavor and microbial management. The adoption of SV varies globally, reflecting its adaptability in different culinary traditions. The review suggests future research avenues, like exploring new natural inhibitors, cooking conditions, and their effects on consumer health, emphasizing SV's role in modernizing cooking practices to meet demands for quality, and safety.

Key words*: culinary innovation, food safety, natural inhibitors, sensory quality, sous-vide.*

NON-DAIRY YOGHURT ENRICHED WITH FUNCTIONAL PLANT-BASED INGREDIENTS - A REVIEW

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Abstract

The paradigm surrounding milk has shifted as consumer preferences evolve due to lactose intolerance awareness and the prevalence of cow's milk allergies. Consequently, plant-based milk substitutes have gained popularity. This study offers a comprehensive examination of the physicochemical, rheological, and sensory attributes of various functional plant-based yoghurts, coconut yoghurt with tapioca, fruits and soy yoghurt with red fruits, mango, lemon grass, etc. The study reveals the potential of these products to fulfil consumer demands for both sensory satisfaction and nutritional benefits. Furthermore, it identifies avenues for further refinement and innovation in product development and formulation, thereby providing valuable insights for both industry stakeholders and consumers seeking viable dairy alternatives. This study underscores the growing importance of plant-based options in meeting diverse dietary needs and preferences in today's evolving food scene. Moreover, it emphasizes the necessity of transitioning to a more plant-based diet to address climate change, reduce environmental impacts, and improve health.

Key words*: non-dairy yoghurt, plant-based, functional.*

RESEARCH ON THE PHYSICO-CHEMICAL PROPERTIES OF MANGALITSA PORK DERIVED FROM PIGS RAISED IN THE NORTHEASTERN REGION OF ROMANIA

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Abstract

Mangalitsa represents a breed of pigs specialized in fat production, which was exploited in our country until the 1950sHowever, the swine population of this breed decreased significantly thereafter due to the emergence of breeds and crossbreeds with much better productive performances, the advent of modern pig farms, and changes in the population`s consumption habits. This paper presents data obtained from the analysis of the physicochemical properties of Mangalitsa pork, derived from pigs raised on a pig farm located in the northeastern region of the country, in Neamț County. The biological material required for this study consisted of Mangalitsa pigs: the red variety and the swallow-belly variety. To achieve the purpose of the study, samples were taken from 3 distinct body regions -neck, thigh, and loin - which were processed in a specialized laboratory. The pH of Mangalitsa pork measured 24 hours post-slaughter ranged between 5.74 and 5.84, with the lowest dry matter values recorded for the batch of pigs from the red Mangalitsa variety. The protein content in the meat varied between 15.47% and 20.90%, depending on the anatomical region, while the lipid content showed wide variations, with the highest values in the Mangalitsa neck. The average values obtained for pH, dry matter, protein, and fat in Mangalitsa pork meat were within the optimal range for this breed, according to specialized literature.

Key words: *loin, Mangalitsa breed, neck, physicochemical properties, thigh.*

DYNAMICS OF CERTIFICATION OF TRADITIONAL DAIRY PRODUCTS AT EU LEVEL AND SPECIFICALLY FOR ROMANIA

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Abstract

Certified traditional products are an essential part of every country`s cultural and gastronomic heritage. The quality and authenticity of these products are ensured by the authentic ingredients and artisanal methods of preparation. Consumers` growing interest in healthy eating makes the certification of traditional products a necessity. In this study, we have carried out a comprehensive statistical analysis of the current number of food products certified under quality schemes such as PDO, PGI, TSG, and also labelled as `Traditional Product` and `Traditional Romanian Recipe`, both in Romania and in the European Union (EU). We also looked in detail at the current number of dairy products certified according to these standards. The data were obtained from the EU`s eAmbrosia electronic register and the Ministry of Agriculture and Rural Development`s CPAC electronic catalogue. The results provide a valuable and up-to-date perspective on certified and labelled food products, contributing to the development and promotion of the gastronomic heritage in Romania and the EU.

Key words*: dairy products, quality scheme, registered Romanian traditional recipe, traditional product.*

THE USE OF SALMON AND TUNA BY-PRODUCTS IN FISH CRACKERS MANUFACTURE

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Abstract

Fish by-products have a great potential for use, both for the food industry and for other industries. Salmon and tuna are valuable species for the food industry, especially those sold as fillets or steaks, but the by-products have a low economic value or are turned into waste. The aim of this study is to obtain new foods by salmon and tuna by-products in order to integrate them into human consumption. Five types of biscuits were created with salmon and tuna byproducts added as salmon oil and fish meat. The products were made in the Bakery Pilot Station of the University of Agronomic Sciences and Veterinary Medicine of Bucharest. After creating the recipes and obtaining the products, the degree of consumer acceptance was established by performing tastings and completing evaluation tests. The evaluation criteria were: taste, aroma, color, general appearance and consistency (five-point hedonic scale). The results showed that the biscuits with salmon meat and dehydrated onion were the most appreciated by consumers.

Key words*: acceptance, consumers, fish, new food products, sensory evaluation.*

INFLUENCE OF FARMING SYSTEM ON THE HISTOLOGICAL STRUCTURE AND SHEAR FORCE VALUES OF CHICKEN BROILERS MEAT

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Abstract

Does the farming system affect the poultry meat texture in broilers of different ages, at same live weights? 300 chicken broilers were reared: conventionally-Control group (42 days old, closed barn); in free range - FR group (56 days at slaughter, access to paddock); in slow growth conditions - SG group (FR conditions, 70 days at slaughter). Upon slaughter, pectoral muscles were sampled from 25 individuals/group and microscopically investigated for myocytes thickness and proportion of tissues in meat. Cylindroid samples of 1 x 1 x 4 cm were measured for shear force. Myocytes were thinner in Control (52.65 µm) vs. FR group (59.17 µm) and SG group (62.23 µm) ($P < 0.01$). SG group had more connective matrix (28.91%) vs. FR group (25.86%) ($P < 0.05$) and Control (23.12%) ($P < 0.01$). Shear force was 51.2 N in SG group, 42.7 N in FR group and 38.1 N in Control ($P < 0.001$). Conventional broilers had better meat texture. Higher shear force dew to more development of connective compartment in meat (older slaughter age and more active muscles in free ranged broilers).

Key words*: conventional farming, free range, muscle tissue composition, shear force, slow growth.*

WATER ACTIVITY AS A STRUCTURING PARAMETER OF THE HYSTERESIS CYCLE AND ITS ROLE IN FOOD STABILITY

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Abstract

In food science, water sorption isotherms are often used to understand the stability of food preserved in different conditions. Water activity is defined as the ratio of the vapor pressure of water in a material (p) to the vapor pressure of pure *water (po) at the same temperature. In food, water activity (a_w) explains how water affects the rate of microbial growth and many other chemical reactions. The paper aimed to study aw as an indicator of structuring the hysteresis cycle, its role in the changes that occur in several dried fruits in the Albanian market and to reach the hysteresis cycle through the determination of aw values in adequate conditions. Referring to physico-chemical indicators as protein, fat, and acidity, they were found to be within the limits allowed by law. So, there was no visible impact on the change of these indicators during the storage period. From the results obtained for walnuts as a specific case, it was observed that due to the dependence of moisture content on aw, the adsorption/desorption isotherms do not overlap, which refers precisely to the hysteresis cycle. It was possible to obtain a second-order desorption isotherm, with a very good approximation.*

Key words*: hysteresis cycle, food safety, moisture, water activity, Water Activity (aw) Meters.*

THE EFFECTS OF SOME COMMERCIAL STARTER CULTURES ON THE BIOLOGICALLY ACTIVE PROPERTIES OF THE CLASSIC YOGURT ASSORTMENT

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Abstract

The main purpose of this study was to investigate the quality indicators of the assortment of classic yogurt obtained by using three commercial varieties of yogurt starter culture, namely: YO-MIX (DANISCO); MJD Yogurt Culture Type I (Proviva Pharma) and YOFLEX® ACIDIFIX® (CHR-HANSEN). The raw material used was cow`s milk. Each variant of the starter culture was added to the pasteurized and cooled milk in a ratio of 1.5; 2.5 and 3% respectively. To evaluate the effect of the three starter cultures and their concentration level in milk, physico-chemical and sensory analyses were performed over a period of 21 days of storage of the yogurt samples. Sensory analyses of different yoghurt products included evaluation of taste, flavour, overall acceptability and texture. The results showed that differences in dry matter, fat, lactose and proteins percentage were not significant and therefore did not influence yoghurt quality. The pH decreases during storage reflected the acidification rate of the culture involved. The average score of sensory properties of yoghurt produced from CHR- HANSEN was higher in comparison to other yoghurts.

Key words*: physico-chemical properties, sensory analysis, starter cultures, yogurt.*

ON THE CONCENTRATION VS. REGULATED MAXIMUM USED LEVEL OF SODIUM NITRITE AS FOOD ADDITIVE (E250) IN CERTAIN PROCESSED PORK

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Abstract

Due to its ambivalent effects on meat products (sensory stabiliser and bacteriostatic) sodium nitrite (E250) is widely used in many foods. According to the EU regulations, the maximum regulated used level (MUL) of E250 is 15 mg/100g meat product. Despite its beneficial effects for food safety, the dietary E250 leads to adverse health effects in children and adults when cumulative consumption occurs and the accepted daily intake (ADI) level of 5 mg/ kg body weight is exceeded). In our study, there were surveyed three types of processed pork (wienerwurst, baloney, bacon), using the UV-VIS spectrophotometry. In wienerwursts, E250 ranged from 0.36 to 9.87 mg/100 g (2.4 to 65.8% of MUL). In baloney, E250 was quantified from 7.37 to 9.12 mg/100 g (49.1 to 60.8% of MUL). In bacon, E250 was measured between 0.25 to 2.16 mg/100 g (1.7 to 14.4% of the MUL). For a child of 45 kg consuming a daily portion of 50 g from each product, the dietary intake would vary between 0,01 mg/ kg BW and 0.32 mg/kg body weight, much below the ADI.

Key words*: processed pork, sodium nitrite, E250, maximum inclusion level, accepted daily intake.*

TECHNOLOGICAL ADVANCES AND SOCIO-ECONOMIC IMPLICATIONS IN THE POULTRY INDUSTRY - AN ANALYSIS OF CURRENT TRENDS IN POULTRY MEAT PRODUCTION AND CONSUMPTION: REVIEW

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Abstract

This paper investigates the evolution of the poultry industry in recent decades, highlighting technological advances and socio-economic changes that have influenced the production and consumption of poultry meat. By analysing data on genetic selection, feeding technologies and impact on animal health, the paper highlights how the poultry industry has become a key pillar of food security. Consumer preferences and consumption trends, including demand for poultry semi-finished products, are also examined. This analysis provides a comprehensive insight into the evolution of the poultry industry and its impact on society, highlighting the importance of continuous research and innovation to ensure sustainable and high-quality poultry meat production.

Key words*: chicken feeding, poultry industry, technological processes, semi-preparation, quality standard.*

INVESTIGATING THE EFFECTS OF STORAGE TEMPERATURE ON THE QUALITY OF FROZEN *Cephalopoda*: A MULTIMODAL APPROACH

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Abstract

Cephalopoda classes are highly valued for their culinary appeal and nutritional value. However, their perishability necessitates careful handling and optimal storage conditions to maintain their quality. This study aimed to investigate the influence of storage temperature on the quality attributes and sensory properties of five commonly consumed cephalopod types: whole squid, whole squid tubes, octopus, Loligo spp. (squid tubes), and Sepia spp. (cuttlefish tubes) classified in five different species: Loligo vulgaris (European squid), Loligo gahi (Japanese squid), Octopus vulgaris (Octopus), Sepia officinalis (Cuttlefish) and Illex argentinus (Argentine shortfin squid). Lower temperatures (−23°C) significantly prolonged shelf life, delaying spoilage onset and preserving taste. The product named calamar had the fastest spoilage rate, followed by whole squid and tube squid, while Octopus had the slowest spoilage rate. Appropriate storage practices are vital for ensuring the freshness and palatability of frozen cephalopods.

Key words*: frozen cephalopods; quality attributes; sensory properties; storage temperature.*

A REVIEW ON BIOGENIC AMINES IN CHEESE

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Abstract

Biogenic amines fulfill different roles in the proper functioning of the human body. They result from oxidation processes in food. Biogenic amines are mainly found in fermented products such as wine, fish, meat and cheeses. Their existence in small quantities does not affect people's health, but in a larger volume leads to poisoning. The most common biogenic amine poisonings were found in tyramine and histamine. The main symptoms of poisoning are increased blood pressure and headaches. The concentration of biogenic amines in cheeses is influenced by several factors: temperature, baking time, pH, the culture used, environmental conditions, the origin of the raw material (raw or pasteurized milk and microbiological load. Compliance with hygienic conditions and the correct manufacturing process does not increase the amount of biogenic amines.

Key words*: cheeses, control, health, methods, storage.*

POLYCYCLIC AROMATIC HYDROCARBONS IN CHEESES AS A RESULT OF THE SMOKING PROCESS: A REVIEW

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Abstract

The presence of smoke when smoking cheeses can have negative effects on the health of consumers. Polycyclic Aromatic Hydrocarbons (PAH) result from pyrolysis processes as well as incomplete combustion without organic sources. The factors that influence the concentration of PAH in cheeses are: temperature, moisture content, type of wood used in the smoking process, origin of the raw material (cow's milk, sheep's milk). The main PAH compound that specifies their presence in food products is benzo[a]pyrene. The interest directed at them is due to the carcinogenic and mutagenic effects they have on human well-being.

Key words*: cheese, contamination, polycyclic aromatic, pollution, toxicology.*

A REVIEW CONCERN TO THE CARDIOPROTECTIVE EFFECTS OF HONEY AND ITS CONSTITUENT

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Abstract

Bee products, especially honey, are the most popular food, easily accessible and commercially available that have a wide range of uses as essential part of diet and in adjuvant therapy to prevent cardiovascular diseases. The complexity of honey`s composition is highlighted by the more than 180 constituents represented by fructose and glucose, as dominant monosaccharides, minerals and small amounts of vitamins, amino acids, enzymes, flavonoids, antibiotics, phenolic compounds etc. Cardioprotective effects of honey are influenced by the variety of honey and its constituents, the sources of nectar used to obtain honey, the method of obtaining and preserving it. In this work we intend to present a review with some results obtained in the use of honey for the cardiovascular diseases prevention or in complementary therapy.

Key words*: bee, apitherapy, cardiovascular diseases, honey.*

THE INFLUENCE OF COMMUNICATION AND MASS-MEDIA CAMPAIGNS ON CHOOSING FOOD ITEMS

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Abstract

In recent years, healthy eating, the alarming problems of obesity and food advertising have become a topic of intense debate. These wide-ranging discussions explore how advertisements shape our perceptions of food, leading us to choose certain products. In this context, the aim of this study was to investigate whether there are significant gender differences in the influence of communication campaigns and media on food choice. Data were collected using a questionnaire (114 people) and the statistical procedures used were descriptive statistics and Pearson Chi-Square test (testing the significance of differences). Testing the significance of the differences between the values observed in the study and the expected values, according to the formulated hypotheses, revealed that these differences are not significant with regard to the respondent's gender variable, in relation to the analysed items. The results obtained are informative in terms of food purchasing behaviour of food products.

Key words*: consumer behaviour; food; healthy nutrition; socio-demographic factors.*

EFFECT OF THERMAL TREATMENT ON STRUCTURE AND FUNCTIONALITY OF ZEIN

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Abstract

Zein is the major protein found in corn, and is considered a promising alternative to gluten for developing functional foods dedicated to coeliac people. In order to improve the functional properties of zein, various physical, chemical or enzyme-based treatments have been tested, looking for broadening its food applications. The effect of heat treatment at high temperatures on zein structural and thermo-mechanical properties was investigated. The molecular modelling results indicated that most zein fractions exhibited important conformation rearrangements at temperatures over 160°C. The partial unfolding of the monomers pre-treated at 180°C might favour the interaction with other molecular species present in the food matrices. The laboratory scale investigation showed that zein treatment at 160°C resulted in the increase of the glass transition temperature. When testing the thermo-mechanical behaviour of the mixtures consisting of zein and rice flour by means of Mixolab, it was found that the use of heat-treated zein interferes with starch behaviour. Based on the obtained results it can be concluded that addition of zein pre-treated at 180°C allows delaying starch retrogradation, when preparing rice flour-based bakery products.

Key words*: rheological behaviour, structure properties, thermal behaviour, zein.*

FROM BEE POLLEN TO BEE BREAD: BEE POLLEN PRESERVATION OR NUTRIENT CONVERSION?

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Abstract

Bee bread, crucial in honeybee hives as the primary protein source, is a fermented mix of pollen, nectar, and honey. Its microbiology significantly influences hive nutrition and immunity. This review examines the conversion of bee pollen to bee bread, highlighting conservation and nutrient retention techniques. Using Web of Science, Scopus, and PubMed, we conducted a detailed analysis of bee bread studies. Our findings reveal a diverse microbial community in bee bread, including bacteria (notably Lactobacillus, Bifidobacterium, Enterobacteriaceae) and yeasts (such as Saccharomyces, Metschnikowia). These microorganisms play key roles in fermentation and preservation, impacting nutrient transformation. The microbial diversity in bee bread varies with environmental and floral factors, indicating adaptability. This research synthesizes current insights into bee bread`s microbiology, focusing on nutrient preservation during its formation. The observed microbial variability in bee bread underscores further research to understand the factors shaping these communities. This knowledge advances our understanding of hive health and bee bread`s role in sustaining honeybee populations. Future studies should investigate specific microbes` functional roles for hive management and honeybee conservation.

Key words*: bees, bee pollen, bee bread, microbial diversity, nutrient transformation.*

ADVANCES IN BIO-BASED FOOD PACKAGING MATERIALS - A REVIEW

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Abstract

In the recent years there has been a constant need for the development of novel packaging materials, which can be defined as made from materials derived from renewable sources, that can provide alternative and sustainable routes for the food packaging industry in order to replace the petroleum-based polymers with bio-based materials. A constant concern for the environment wellbeing has been the agricultural waste which is not valorised in a sustainable matter but rather incinerated or disposed of in landfills. A novel way to promote a circular bio economy would be to utilise these agri-food waste and by-products for the development of novel and sustainable packaging materials. This article aims to review the development of bio-based packaging materials and production technologies considering by-products and waste minimization, recyclability, biodegradability, and their impact on the circular bio economy and sustainability.

Key words*: agricultural waste, circular bioeconomy, sustainable packaging materials.*

INFLUENCE OF SOME NATURAL SEEDS AND POWDERS ADDITION ON THE WHITE BREAD ANTIOXIDANT PROPERTIES AND OTHER CHARACTERISTICS

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Abstract

Bakery products industry occupies a very important place in people's major consumer products. Bread is a staple product that almost all of us consume every day. These foods provide the human body with an important part of the nutrients it needs for vital activity. A first objective of this work was to obtain two innovative assortments of white bread enriched with different additions: one with the addition of turmeric (Curcuma longa) radix powder and linseeds (Linum usitatissimum) (B1) and the second with the addition of sea buckthorn (Hippophae rhamnoides) fruits powder, sunflower (Helianthus annuus) and white sesame (Sesamum indicum) seeds (B2). A second objective was analysing the two enriched breads in terms of total polyphenols content, antiradical and antioxidant activity compared to the control (B0 - plain white bread). Porosity, proximate composition, energy value of the breads as well as their sensory characteristics were also determined. Total polyphenol content in B2, respectively B1 breads was with 66% and respectively 49% higher than the control (1.41 ± 0.02 mg gallic acid/g). Anti-radical activity of the products was improved by 2.3 times in B2 and with 43% in B1 compared to plain white bread (38,76 ± 0.19%). The porosity of B0 bread was the highest (68%), decreasing for B1 (60%) and B2 (53%) assortments. In terms of proximate composition, the additions of natural seeds and powders resulted in increased lipid and dietary fiber content, compared to the control. At the sensory analysis, B1 and B2 were rated higher than the control, with B2 scoring best (between 4.70 and 4.85)

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Key words*: antioxidant activity, bread, polyphenols, seeds, sea buckthorn, turmeric.*

INFLUENCE OF THE ADDITION OF APICULTURE PRODUCTS ON THE CHARACTERISTICS OF FORTIFIED YOGHURT

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Abstract

Dairy products represent food appreciated by a large number of consumers, of all ages. The aim of this work was to fortify yoghurt with bee products and to characterize sensory, physico-chemical and microbiologically the products obtained. We used for fortification: honey, pollen and royal jelly and propolis. Sensory evaluation showed good acceptability of all products, but the most appreciated were those with honey in combination. The addition of honey as such or in combination reduces the acidity of the fortified yoghurt. Antioxidant activity was greatly enhanced as a result of fortifying the yoghurt, with most antioxidants found in the royal jelly yoghurt sample. Antimicrobial activity was substantially inhibited by the presence of bee products.

Key words*: acidity, antimicrobial activity, antioxidant activity, sensorial, yogurt.*

EFFECT OF SEX ON CHEMICAL COMPOSITION AND MEAT QUALITY OF JAPANESE QUAIL (*Coturnix japonica*)

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Abstract

Japanese quail (Coturnix japonica) is used for egg production, as laboratory animals, in amateur breeding as an ornamental bird and for meat production. Quail meat is becoming more and more popular in Poland. The aim of the study was to analyze the chemical composition of Japanese quail meat from a Polish breeder, taking into account the sex of the birds. The research was carried out on 20 chilled quail carcasses - 10 females and 10 males. Meat pH, basic chemical composition, amino acid levels, fatty acid profile, cooking loss and color parameters were determined in the breast muscle. The analyzed meat was characterized by high cooking loss. The chemical composition of quail meat, especially the high protein content and low fat content, make this meat characterized by a low caloric value. The meat of males was characterized by a higher content of lysine and glutamic acid and a lower content of histidine, arginine, tyrosine and methionine compared to the meat of females. The gender of quails had no significant impact on meat quality parameters.

Key words: *chemical composition, color, Japanese quail, meat, quality.*

CHANGES IN THE SENSORY PROFILE OF NITRITE-FREE SALAMI FORMULATED WITH THE ADDITION OF FRUIT POWDER MIXTURES

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Abstract

This study evaluated the effects of incorporating fruit powder mixtures, consisting of sour cherries powder (SCP), blackcurrants powder (BCP) and cranberries powder (CP), as natural sodium nitrite substitutes on the sensory attributes of nitrite-free salami. Four powder mixtures (SCP+BCP, BCP+CP, CP+SCP and BCP+CP+SCP) have been included in the salami formulas at a dose to provide a total phenol content (TPC) of 90, 200 and 300 mg gallic acid equivalent (GAE)/kg meat, with the minimum dose set according to the level of nitrite content per kg of processed meat (90 mg nitrite/kg). Before use, the fruits were slowly convective dehydrated at a temperature of 60°C. The results revealed that the addition of fruit powder mixtures impacted on the appearance of sample, while other sensory characteristics did not show any significant change. The highest overall acceptability was recorded for sample with BCP+CP+SCP in a dose that provided a TPC of 300 GAE/kg meat. Thus, fruit powders could become an attractive option in the formulation of nitrite-free meat products due to their high total phenol content.

Key words*: fruit powder mixtures, nitrite-free salami, sensory profile, sodium nitrite substitute.*

INFLUENCE OF THE ADDITION OF ESSENTIAL OILS ON THE MICROBIAL LOAD IN YOGHURT MILK

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Abstract

Yoghurt milk can be fortified with some natural ingredients to improve its functionality, including probiotic bacteria content, prebiotic additives, phenol derivatives and dietary fibre. In addition to these functional ingredients, yoghurt is usually fortified with non-nutritive food additives, such as flavours, to enhance its sensory characteristics. Another biotechnological approach to flavouring yoghurt is by using a mixture of bacteria to develop flavour esters through biotransformation reactions in milk during fermentation. The aim of the present work was the formulation of four essential oils in water-based nanoemulsions and their separate incorporation into different batches of cultured milk fortified with a mixture of selected lactic acid bacteria. The herbal essential oils that were added to the milk samples were mint, lavender, lemon and orange. The potential effect of these essential oils on the physicochemical, microbiological, sensory and overall acceptability of the resulting yoghurt was reported.

Key words*: antioxidant activity, essential oils, microbial load, milk, sensory analysis, yoghurt.*

RESEARCH ON EFFECT OF ACTIVE AND SUSTAINABLE ANTIMICROBIAL PACKAGING ON GROUND BEEF

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Abstract

Food packaging is innovating towards greener polymers and wider applications of bioactive compounds. Biodegradable active packaging based on natural compounds is a new approach, as it aims to improve shelf life. In this study, the active packaging materials used were chitosan/gelatin/clay polymer films in which sage, fennel, sea buckthorn nanoemulsions were incorporated. To carry out the experiments, the analysed meat was purchased from a chain of butchers in a store in Bucharest. For these experiments, chilled minced beef was chosen. Physical-chemical analyses were carried out on minced beef packed in chitosan/gelatin/clay polymeric films incorporated with nano-emulsions of sage, sea buckthorn, the control package being the polyethylene terephthalate casserole. The physical analyses performed during the experiments were: determination of free ammonia, water activity, colour analysis, analysis of dry matter and moisture content and determination of pH. The microbiological analyses consisted in determining the total plate count (NTC) and the presence of E. coli/coliform bacteria. Based on physical-chemical and microbiological analyses, both the freshness of the meat and its shelf life were determined, during seven days of storage (day 0, day 3, day 5 and day 7) at chilling temperature (4ºC). Following the results obtained in the physical-chemical analyses, we can state that there is a clear difference in the quality of the meat used in the experiments, during the storage period, depending on the packaging type used.

Key words*: bioactive compounds, food packaging, green polymer films, natural compounds, shelf life.*

THE EFFECT OF PUMPKIN POWDER ON THE QUALITY OF TRITICALE PASTA

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Abstract

An important role in the development of new types of pasta is the use of non-traditional raw materials. Triticale is a hybrid crop derived from crossing wheat and rye. The objective of this study was to investigate the effect of pumpkin powder in different concentrations (1.5-7%) on the rheological properties of dough, sensory quality, physico-chemical and color parameters of dry and cooked triticale pasta. It was shown that pumpkin powder presented a rich source of bioactive compounds (polyphenols, flavonoids, carotenoids) with a high antioxidant potential. In comparison with the control sample, the introduction of the pumpkin powder influenced the decrease of elasticity and gumminess of the dough and led to the formation of the dough with minimal resistance to deformation. Sensory analysis showed that pasta with 5% pumpkin addition accumulated a maximum score. The use of pumpkin powder contributed to improving the rheological properties of the dough and the sensory quality of the triticale pasta. Acknowledgments to the AUF project "Extraction 'verte', stabilisation et valorisation des composants bioactifs de Ribes nidrigolaria et Cucurbita maxima".

Key words*: color parameters, pasta, physico-chemical parameters, pumpkin powder, rheological properties, sensory quality, Triticale.*

ENCAPSULATED BIOLOGICALLY ACTIVE COMPOUNDS FROM RED GRAPE POMACE - A FEASIBLE ALTERNATIVE TO SYNTHETIC DYES

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Abstract

The microbiostatic activity of grape polyphenols is due to secondary metabolites that can inhibit the growth of bacteria, yeasts and molds. But the effectiveness of these compounds is significantly lower in situ, in the matrix of real foods, than in native biological systems, where they are naturally protected. To improve the stability and bioavailability of bioactive compounds, a number of delivery systems have been designed and developed. Liposomes with self-assembled membrane-like structures from amphiphilic phospholipids dispersed in the aqueous phase have the ability to mask astringency and maximize the biological function of ingredients. The objective of the research was to protect the biologically active compounds extracted from red grape pomace by encapsulating them in liposomes, making the encapsulated natural pigments applicable in confectionery, dairy products and soft drinks, as a feasible alternative to synthetic dyes. Acknowledgments to AUF, project "Valorization of bioactive compounds from agro-industrial waste by liposomal encapsulation".

Key words*: circular approach, extracts, liposomes, sustainable development, waste recycling, winemaking by-products.*

THE VALORIZATION OF PLANT AND ANIMAL BY-PRODUCTS FOR FOOD SUSTAINABILITY

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Abstract

This review is based on a bibliographic study of over 70 articles published between 2001-2023 and tried to highlight the most important valorization directions, as well as the most used valorization methods of waste from the food industry, for the purpose of environmental sustainability. The recycling of waste in the cascade helps to solve problems related to the environment, economic, social, ethical, etc. Waste recovery methods are diversified depending on the type of waste, requiring in-depth studies, innovative technologies, an appropriate legislative framework, as well as alternative solutions, etc., so as to obtain zero waste. Current perspectives come in the face of finding alternative solutions, such as meat analogous and food industry sustainability approaches.

Key words*: animal by-products, sustainability, vegetable by-products.*

USING THE BIOPROTECTION CULTURE FOR DRY FERMENTED SALAMI - THE CONTROL MEASURE OF *Listeria monocytogenes* GROWTH

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Abstract

The control of Listeria monocytogenes (Lm) growth in dry fermented salami represents an important issue in food safety for the meat processing industry. The dry fermented salami represent ready to eat meat products (RTE) with a long shelf life. According to the Regulation (EC) no.2073/2005, Lm represents a food safety criteria for RTE products. Lm is the pathogen agent of human listeriosis, an emerging global zoonoses. The human listeriosis is one of the most severe food born disease that affects certain risk categories in the human population, mainly transmitted during consumption of contaminated food. The purpose of our study is to evaluate the effect of bioprotection cultures for dry fermented salami to control the Lm growth. The bioprotection cultures contain strains of Pediococcus acidilactici that produces pediocin, a bacteriocin with antimicrobial action against Gram positive bacteria, including Lm. The Lm counts during fermentation-smoking and ripening-drying stages highlights that the Lm number decreased by 3.2 log cfu/g during the 30 days in the batch LII , whereas the reduction in the batch LI (without bioprotection culture - the control batch) was 1,03 log cfu/g.Based on results, the use of bioprotection cultures is a useful measure to control the Lm growth for the dry fermented salami. It represents a preventive measure of human listeriosis during the food consumption.

Key words*: bioprotection culture, dry fermented salami, Lm, Pediococus acidilactici, RTE.*

QUALITY ASSESSMENT OF SOME ASSORTMENTS OF CHICKEN HOT DOG SAUSAGES

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Abstract

The purpose of this paper was the comparative assessment of the quality of some assortments of chicken hot dog sausages sold in Romania. Two batches of five varieties of hot dog sausages were taken in the study: Caroli, Fox, Cris-Tim, Meda and Pikok/Lidl brand, coded from A to E. Sensory (five-point scale method) and physico-chemical properties were analyzed. Were determined the pH of the products, the content of mineral substances (by calcination at 550°C), the content of water, lipids, proteins, collagen and salt (with the Food-Check infrared spectrophotometer). The results showed very high differences between products in terms of fat content (between 13.5% and 25.1%), the variability was lower for proteins (between 16.6% and 19.3%) and water content (between 57.2% and 66.5%). The salt content had the highest value of 2.83%, exceeding the maximum standard limit, only in the case of C product. The results of the sensory analysis revealed a minimum score for product E (10.63 points/`unsatisfactory product` according to quality standards), compared to product B which obtained the best score among all the analyzed assortments (17.70 points/`good product`).

Key words*: chicken meat, quality, sausages.*

SENSORIAL EVALUATION OF PORK MEAT SAUSAGES ENRICHED WITH CHOKEBERRY (*Aronia melanocarpa*) AND BLUEBERRY (*Vaccinium myrtillus*) POWDERS

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Abstract

Sensory characteristics evaluation (appearance, color, smell, taste, texture) represents the most important criterion in the purchase decision of meat products. The aim of the study was to produce and sensory evaluate seven batches of pork meat sausages (blank , sausages+chokeberry powder in concentration of 1,2%, 2,5%, 5% and sausages+blueberry in concentration of 1,2%, 2,5%, 5%). The plant-based powders were added to improve shelf-life of the products and the sensorial assessment was used to choose the best concentration in terms of consumers´ acceptance. The evaluation involved completing an acceptability questionnaire using a 9-point hedonic scale, an acceptability test with scores on the general attributes of appearance, texture, aroma, taste, overall quality and CATA (`check all that apply`) test. The most favorable responses were recorded for the sausages with 2.5% chokeberry, followed by the sausages with 1.2% chokeberry. As an important feature, it is the color change, appreciated by consumers. The most unfavorable responses were received following the evaluation of the sausage samples with 5% cranberry extract which gave a sweet taste uncharacteristic of meat products.

Key words*: blueberry powder, chokeberry powder, pork meat sausages, sensorial evaluation.*

METHODS FOR DETECTING *Bacillus cereus* CONTAMINATION IN DAIRY PRODUCTS - A FOOD SAFETY PERSPECTIVE

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Abstract

Every microbial environment starts with an initial contamination from microorganisms present in soil, water, and atmospheric dust. The unique characteristics of each environment ultimately dictate which species or types of associations become dominant. Consequently, microorganisms with high resistance to inhibitory or lethal factors often thrive in food products, on various surfaces, and on machinery and equipment. Bacillus cereus serves as a prime example, widely distributed in nature and considered an opportunistic pathogenic species. Research conducted between 2021 and 2023 focused on several categories of milk powder samples collected from sales networks in Călăraşi County, Ilfov County, and Argeş County. These categories included skimmed milk powder with 1% fat, milk powder with 26% fat, organic milk powder with 26% fat, milk powder for children aged 4-5 years, and of milk powder for infants aged 9-12 months. The analysis of these five products involved two categories of methods: confirmation on MYP agar, blood agar, and real-time PCR testing for the amplification and detection of specific Bacillus cereus DNA. Identification of species within the B. cereus group was conducted using specific tests.

Key words*: Bacillus cereus, microbial niche, milk powder, pathogen.*

STUDY ON LACTIC ACID BACTERIA POTENTIAL TO INCREASE THE SHELF LIFE OF PERISHABLE AGRO-FOOD PRODUCTS

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Abstract

The aim of this study was to evaluate the potential of 15 strains of lactic acid bacteria (LAB) for their use in increasing the shelf life of different perishable food products. Different LAB species of food origin were used, namely Lactobacillus brevis, L. farciminis, L. fermentum, L. plantarum, Pediococcus pentosaceus, P. acidilactici, Weissella cibaria, and Enterococcus faecium. Several screening tests were taken into account, mainly related to their probiotic potential, such as: production of bacteriocins, exopolysaccharides, phytase, proteases, lactic acid, acetic acid, but also by testing antibacterial and antifungal activity. The strains were also tested for lyophilization resistance to determine their preservation capacity. The study found that the strains of Lactobacilus fermentum, Pediococcus pentosaceus, and Lactobacillus plantarum had the greatest probiotic potential, with significant antibacterial and antifungal activity against a wide range of pathogenic bacteria and food spoilage fungi. They are capable of producing exopolysaccharides, lactic acid, and phytase, and cannot produce acetic acid. Furthermore, the three strains demonstrated enhanced resistance to lyophilization, with Lactobacillus plantarum obtaining a 98.40% viability rate after lyophilization.

Key words: *lactic acid bacteria, preservation, probiotic.*

PRELIMINARY STUDIES ON OBTAINING A CHEESE MADE EXCLUSIVELY FROM WHEY ENRICHED WITH PUMPKIN POMACE POWDER

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Abstract

Pumpkin (Cucurbita maxima) is a popular vegetable widely cultivated and consumed due to its rich content in biological active compounds and essential nutrients. Pumpkin pomace (PP) powder, which is a by-product derived from the pumpkin industry, has garnered considerable attention as a potential useful component for enhancing the overall quality of foods. The study involved the addition of varying amounts (1 and 2%) of pumpkin powder to whey cheese compositions. This study aims to evaluate the effects of PP powder addition on the physical, chemical, color, microbial and sensory characteristics of whey cheese, alongside its impact on the product's nutritional value. PP powder is a good source of phytochemicals such as carotenoids and polyphenols, with remarkable antioxidant capacity. The results indicate that the incorporation of PP powder resulted in enhanced nutritional and colour characteristics of the cheeses. Furthermore, the incorporation of pumpkin powder resulted in a substantial increase in the levels of phytochemicals and antioxidant activity. The resulting supplemented cheeses offer a unique color profile, appealing to health-conscious consumers seeking innovative dairy products. Developing these products has the potential to facilitate sustainable food production and offer consumers a wider range of food options with improved attributes.

Key words*: antioxidant activity, cheese, food ingredients, pigments, pumpkin pomace.*

EFFECTS OF MEAT CONSUMPTION ON CONSUMERS' HEALTH

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Abstract

Meat is a major part of human diets for centuries, a source of protein and essential nutrients, but concerns have been raised about the potential negative health impacts associated with high meat consumption. This review paper aims to provide an overview of the current scientific evidence on the effects of meat consumption on consumer health. The review covers the evidence on the relationship between meat consumption and various health outcomes, including cardiovascular disease, cancer, type 2 diabetes, and obesity. The review discusses the potential for promoting healthy meat consumption patterns and recommendations for consumers and policy-makers to reduce meat consumption and promote healthier dietary choices. Overall, the review highlights the complex relationship between meat consumption and consumer health, and the need for further research to better understand this relationship and inform public health policy and dietary guidelines.

Key words: *healthy food, meat processing, nutritional quality.*

COMBATING FOOD WASTE BY MAKING A FUNCTIONAL PRODUCT FROM A SLAUGHTERHOUSE BY-PRODUCT AND PROFILING ITS NUTRITIONAL VALUE

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Abstract

The main objective of the current study was to use a by-product from the deboning process of poultry meat and use it to produce products with high nutritional value. Four product assortments (chicken and turkey soup concentrate and chicken and turkey stock respectively) were produced using bone tissue of the two species as biological material. It was found that there were no significant differences in the technological process to obtain them, the most varied differences being evident in the raw chemical composition, where chicken broth concentrate had the highest percentages of water (69.5%), protein (20.1%) and collagen (18.2%) compared to chicken stock where a higher rate of fat (17.6%) was evident. In the case of turkey backbone products, the highest percentage of fat was found in the concentrated broth, with the stock having the highest percentages of water (65.2%), protein (18.8%), and collagen (17%). The color characteristics are closely related to the Maillard reaction resulting from the cooking operation of the biological material, resulting in products with a positive sensory appearance and microbiological safety.

Key words*: bone stock, circular economy, concentrated soup, food waste.*

FROM WASTE TO VALUABLE FOOD: DEVELOPMENT AND QUALITATIVE DIFFERENTIAL CHARACTERIZATION OF BONE BROTHS FROM JUVENILE AND ADULT CATTLE

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Abstract

Following the slaughtering and processing of animals for meat, only one-third of them is meat, while the remainder consists of byproducts and waste, which need to be processed and utilized appropriately. Industrial byproducts constitute costly losses for these industries and pose challenges in their eco-friendly disposal. These costs can be offset through innovation to generate value-added products that increase profitability. Efficient utilization of byproducts has a direct impact on the economy and the environment. This study explores the potential to create collagen-rich bone broths and to this end, four batches were developed, two made from bones sourced from adult cattle and two from bones sourced from juvenile cattle. These were analyzed physicochemically and microbiologically to characterize them qualitatively. The findings suggest that both types of bone broths offer significant nutritional value, with variations influenced by the age of the cattle and the vegetable additions, as evidenced by highly significant differences ($p < 0.001$) among batches obtained through statistical processing. These findings underscore the importance of efficiently exploiting resources and the potential to develop valuable food products from seemingly residual sources.

Key words*: bone broth, animal by-products, quality characterization, new valuble products.*

ENHANCING ANTIOXIDANT CAPACITY IN FUNCTIONAL MEAT PRODUCTS THROUGH INFUSION WITH SEA BUCKTHORN OIL TO COMBAT INHERENT ANTIOXIDANT DEFICIENCY

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Abstract

Given the growing concern in recent years for a healthier diet, attention must also be directed towards improving the quality profile of meat products and transforming them, as much as possible, into functional foods that combine the benefits of plant-based products with those of animal-origin products. With this in mind, we aimed to develop a functional meat product, given the recent scrutiny these products have faced, by using an oil with antioxidant effects to enhance the antioxidant profile of products with insignificant endogenous antioxidant levels. To achieve this, three batches of pork tenderloin were injected with 1%, 3%, and 5% sea buckthorn oil, and were analyzed in terms of antioxidant capacity, physicochemical and microbiological quality, and sensory perception. Most results showed highly significant differences ($p < 0.001$) between batches, with superior quality observed in the batch injected with 5% sea buckthorn oil and subjected to heat treatment. However, consumers preferred the batch injected with 3% sea buckthorn oil due to its more balanced taste. This research underscores the potential to develop meat-based functional foods with enhanced nutritional benefits.

Key words*: meat products, functional meat products, antioxidants, sea buckthorn oil.*

THE IMPACT OF FRUIT FIBER ON MEAT PRODUCTS: A MINI REVIEW

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Abstract

The meat industry is making technological advancements in order to provide food that is both healthier and more sustainable. The purpose of this study is to provide an overview of the impacts that may be attributed to the incorporation of whole fruits or byproducts in a variety of forms into different meat products. The review investigated the effects that these incorporations have on physicochemical and technological features, sensory characteristics, and the potential to improve shelf life. The incorporation of fruit fiber into meat products led to an increase in cooking yield, emulsion stability, capacity to bind water and fat. However, it also resulted in a reduction in shrinkage, cooking losses and pH, with variations depending on the concentration, type, initial pH, and storage period. The addition of dietary fiber led to an increase in hardness and chewiness, despite the fact that it enhanced the water-holding capacity and reduced the cooking loss. It was found that the effect on the instrumental color characteristics and color sensory perception differed depending on the source of the addition and its color.

Key words*: fruit fiber; byproducts, meat products, quality parameters.*

QUALITATIVE DIFFERENCES CAUSED BY THE ADDITION OF LIQUID SMOKE IN MEAT PRODUCTS WITH DIFFERENT STRUCTURES COMPARED TO TRADITIONAL SMOKING

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Abstract

The aim of this study was to compare the qualitative and sensory disparities between conventionally smoked meat products and those treated with liquid smoke. Conducted at the University of Life Sciences' meat micro-production workshop (IULS), the experiment yielded three batches of meat samples: compact, heterogeneous, and emulsion. While batches 2 and 3 received treatments of 0.1% and 0.2% liquid smoke, respectively, across all three product categories, the control batch was subjected to conventional smoking. Twenty semi-trained evaluators conducted both sensory and physicochemical analyses. Liquid smoke significantly altered the texture, flavour, and appearance of emulsion-type goods, favouring samples that had been traditionally smoked. The variations were less pronounced in the products with heterogeneous structures, where there was a slight preference for the control batch and a considerable appreciation for the 0.2% liquid smoke batch.

Key words*: meat products, smoking methods, liquid smoke, sensory preferences*

THE IMPACT OF BONE BROTH ADDITION ON THE SENSORY ACCEPTABILITY OF ASSORTED MEAT PRODUCTS WITH HETEROGENEOUS STRUCTURE

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Abstract

A significant challenge in today's food industry is managing leftover bone waste, which is often disposed of as household or abattoir waste if it is not economically used. This study aims to integrate cattle bone broth into a functional product with a diverse meat structure. The study seeks to explore sensory changes induced by bone broth properties on product quality and assess consumer acceptance. Two sets of sausages were made, one from pork shoulder and the other from pork loin, each with four groups: a control sample and three variations with 3%, 6%, and 9% bone broth. Sensory analysis involved 80 evaluators, untrained. Acceptability tests showed a strong preference for batches with bone broth, with over 60% positive feedback. The batches with a high percentage of acceptability by evaluators are represented by batches SAU2, SAU4, and SAU7. Among the sensory attributes associated with these batches were juiciness, tenderness, overall aroma, and bone broth aroma. Adding bone broth significantly enhanced pork sausages' sensory attributes and appeal, offering a sustainable approach to waste utilization and consumer satisfaction.

Key words*: broth bone, functional product, sensory acceptability.*

EVALUATION OF THE IMPACT OF ARTIFICIAL ADDITIVE ON PHYSICOCHEMICAL QUALITY PARAMETERS IN A FUNCTIONAL MEAT PRODUCT WITH HETEROGENEOUS STRUCTURE

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Abstract

This work aims to evaluate the impact of sodium erythorbate ($C_6H_7NaO_6$) in different amounts (0.05%; 0.1%) on physicochemical quality parameters in a functional product with heterogeneous structure. We aimed to test two main anatomical areas used in the process of obtaining the finished product: Musculus gluteus maximus and Musculus longissimus dorsi from Sus scrofa domestica. Data distribution was evaluated using SPSS Statistics 26.0 software. Multivariate Analysis of Variance (MANOVA) is used to determine if there are significant differences between the amounts of $C_6H_7NaO_6$ and anatomical area on physicochemical parameters considering their interactions. Pearson correlation was used to analyse the degree of association between the amounts of $C_6H_7NaO_6$, the anatomical zone, and the physicochemical quality parameters of the finished product. Based on the results obtained, recommendations can be made on the optimal concentration of $C_6H_7NaO_6$ % to achieve the desired effects on physicochemical quality parameters without compromising consumer safety.

Key words*: artificial additive, anatomical areas, heterogeneous structure, sodium erythorbate, physicochemical parameters, meat product.*

IMPACT OF DISODIUM DIPHOSPHATE ON THE COLORIMETRIC PROFILE IN A MEAT PRODUCT WITH HETEROGENEOUS STRUCTURE: AN ANALYSIS IN ACTUAL TECHNOLOGY

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Abstract

The use of emulsion stabilizers in today's technology is a way of reducing the processing steps of the finished product, with significant economic importance, leading to savings in processing time and costs. The aim of this work focused on the analysis and evaluation of the emulsion stabilizer, $Na_2H_2P_2O_7$ on the colorimetric profile in a meat product with a heterogeneous structure of Sus scrofa domesticus. Water (%), fat (%), protein (%), collagen (%), and salt (%) contents were also monitored. Depending on the fat and water content, the agent absorption may vary, which may affect the uniformity or intensity of the colour of the finished product. The experimental samples consisted of a control batch and 0.09% $Na_2H_2P_2O_7$ per 3000 g of meat fed to the experimental batch. Data distribution was evaluated using SPSS Statistics 26.0 software and Graph Pad Prism 9 software. A T-test was applied to evaluate the influence of the $Na_2H_2P_2O_7$ on quality biomarkers (%). Linear regression was applied to determine if there was a linear relationship between $Na_2H_2P_2O_7$ and the CIE(Lab) system parameters: L(D65), a*(D65), and b*(D65). The results showed significant effects of $Na_2H_2P_2O_7$ in fat content (%) and water (%), thus influencing the colorimetric profile.*

Key words*: actual technology, colorimetric profile, meat product, heterogeneous structure, emulsion stabilizer.*

IMPACT OF BONE BROTH ON PROTEIN CONTENT, COLOR AND CONSUMER PREFERENCES IN EMULSIFIED CHICKEN AND TURKEY FRANKFURTERS

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Abstract

This study investigated the impact of incorporating beef bone broth into chicken and turkey frankfurters. Thus, diversification was achieved by the type of meat used and the level of bone broth introduced, resulting in the following samples: CC (control chicken frankfurter), C3% (chicken frankfurter with 3% bone broth), C6% (chicken frankfurter with 6% bone broth), C9% (chicken frankfurter with 9% bone broth), CT (control turkey frankfurter), T3% (turkey frankfurter with 3% bone broth), T6% (turkey frankfurter with 6% bone broth), and T9% (turkey frankfurter with 9% bone broth). After manufacture, the products were analysed in terms of chemical composition, instrumental colour and sensory perception. The addition of bone broth significantly increased moisture content and protein content (particularly at higher broth concentrations) compared to control sausages. Conversely, fat content decreased with increasing bone broth. The sensory evaluation revealed no significant changes in flavor, texture, or overall acceptability with broth addition, although some panelists perceived a sensory improvement. Instrumental color analysis showed minimal impacts on lightness and redness with broth addition, suggesting the broth's color did not substantially influence overall sausage color.

Key words*: beef bone broth, frankfurters, chicken/turkey sausages.*

VARIATION IN MINERAL OIL HYDROCARBONS CONTENT OF MILK DURING PROCESSING

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Abstract

The presence of MOSH/MOAH in a food product may be a consequence of unintentional contamination occurring at various levels of the supply chain or migration from packaging. This paper represents a preliminary research whose purpose is to highlight the differences between the contamination level of unprocessed and processed milk samples, respectively to analyze the variation of the contamination level following processing, in order to evaluate the contamination risk associated with different methods of milk processing. Using LC-GC-FID, saturated and aromatic mineral oil hydrocarbons (MOSH; MOAH), were quantified in eight milk samples: four initial samples of unprocessed liquid milk and four final samples of freeze-dried milk. All statistical analyzes were performed using the SPSS v.20 software package. The results of the comparative analysis revealed an important contamination of the milk following the applied processing. Quantitatively, MOSH and MOAH contents varied significantly between initial samples (0.8-8.7 mg/kg MOSH; 0-2.8 mg/kg MOAH) and final samples (4.5-13.1 mg/kg MOSH; 3.2-5.35 mg/kg MOAH), with significant differences relative to the mean of variables measured for the two independent sample groups.

Key words*: mineral oil hydrocarbons, contamination, milk, processing.*

SESSION WILD LIFE MANAGEMENT, FISHERY AND AQUACULTURE

ANALYSIS OF MEAT QUALITY AND PRODUCTIVITY INDICES IN FISH SPECIES WITH DIFFERENT NUTRITIONAL SPECTRUM

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Abstract

Nutritional behavior and feed intake contribute to fish growth dynamics, productive indices and meat quality. In this study, productive indices and meat quality were analyzed in three fish species with a different nutritional spectrum: a predatory species, the rainbow trout (Oncorhynchus mykiss), an omnivorous species, the wild Danube carp (Cyprinus carpio) and a planktonivorous-detritivorous species, the golden grey mullet (Chelon auratus). A phenotypic characterization of the species was performed (measurements), body size indices were calculated [Fulton condition factor (K), profile index (Pi), thickness index (Ti), Kiselev quality index (KQi) and meatness indices (Ci1-Ci2)], slaughter yields and organs weight ratio and body segments, as well as meat quality. The obtained results show us higher values of the protein level in the meat of fish from natural environments (Danube carp and golden grey mullet) due to the more varied nutritional spectrum. Slaughter yields were also better for wild species.

Key words*: body indices, fish meat, nutritional value, slaughter yield.*

FLOODED AREAS IN THE DANUBE DELTA: A PATH FOR INVASIVE SPECIES

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Abstract

During spring season, the water level in the Danube Delta increases due to heavy rainfall and melting snow throughout the Danube basin and tributaries. Our research aimed to inventory the fish species from flooded areas of the Danube Delta, during the spring season. The sampled areas consisted of landmarks on all the three branches of the Danube: Chilia, Sulina and Sf. Gheorghe. A total of 462 fish of the following species were caught: Rhodeus amarus, Blicca bjoerkna, Alburnus alburnus, Rutilus rutilus, Pseudorazbora parva, Gasterosteus aculeatus, Pungitius platygaster, Perccottus glenii, Ballerus sapa, Neogobius melanostomus, Misgurnus fossilis, Cobitis elongatoides, Carassius gibelio, Tinca tinca, Babka gymnotrachelus, Knipowitschia caucasica, Neogobius fluviatilis, Ponticola eurycephalus, Proterorhinus marmoratus, Scardinius erythrophthalmus, Vimba vimba, Perca fluviatilis, and Ponticola kessleri. The analysis of the obtained results in terms of fish species during the inventory of the flooded areas from the Danube Delta, emphasizes that the observed species might be opportunistic, by migrating in the temporary habitats, some of the species being considered invasive.

Key words*: allometry, fish species, morphometry, protected areas.*

HEAVY METALS CONTAMINATION IN THE ARIEȘ RIVER (TRANSYLVANIA) AQUATIC ENVIRONMENT

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Abstract

Water quality is crucial to the success or failure of a fish culture operation. Any aquaculture plan must specify the quality and quantity of water available. Industrial and urban activities release harmful pollutants such as heavy metals and pathogenic bacteria into the water, posing significant health risks to humans. Heavy metals like lead, cadmium and mercury are particularly dangerous as they can become toxic when they accumulate in tissues due to the body`s inability to metabolize them. The primary sources of contamination are human activities such as discharge of contaminated waste, mining, misuse of agricultural chemicals, air pollution, and industrial processes like tanning, dying, and energy and chemical plant operations. This review focuses on heavy metal contamination in water and fish, and provides recommendations on how to minimize toxicity in the aquatic environment.

Key words*: lead, mercury, pollutants, water quality.*

RESEARCH STUDY OF MAMMAL SPECIES OF HUNTING INTEREST IN FOUR HUNTING FUNDS IN TELEORMAN AND PRAHOVA COUNTIES

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Abstract

The need to ensure biodiversity conservation is seen as a measure to adapt to climate change and at the same time to protect vulnerable species by preserving and restoring ecosystems. For this purpose, in this article, was study the vulnerability of three species of mammals of hunting interest (deer, rabbit and wild boar) and their adaptation to the effects of climate change in two hunting funds in Teleorman County (hunting fund 1 Flămânda and hunting fund 62 Islaz) respectively Prahova county (hunting fund 43 Lapoș and hunting fund 11 Gherghița).

Key words*: biodiversity conservation, mammal species*

IDENTIFICATION OF POTENTIAL EFFECTS OF MINERAL AGGREGATES EXTRACTION ACTIVITY FOLLOWING AN ADEQUATE IMPACT ASSESSMENT ON PROTECTED BIRD SPECIES IN TWO NATURA 2000 SITES FROM TELEORMAN AND PRAHOVA COUNTIES

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Abstract

By its very nature, the extraction of mineral aggregates invariably has an impact, often negative, on the ecosystem where it occurs. In essence, it requires that any extraction of mineral aggregates likely to have a significant effect on protected bird species be subject to an appropriate assessment detailing this impact on them and how will align with the conservation objectives of the two Natura 2000 sites. In this article two Natura 2000 sites from Teleorman and Prahova counties (ROSPA0024 OLT-DANUBE confluence and ROSPA0152 IALOMIȚA corridor) where study considering the impact evaluation of mineral aggregates extraction on the protected bird species.

Key words*: environmental impact, mineral aggregates extraction.*

CONSUMER PERCEPTION ON AQUACULTURE GOODS AND SERVICES IN ROMANIA

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Abstract

Human consumption of fish meat is very heterogeneous, differing from one part of the world to another, from one country to another, from one region to another and is influenced by many factors. In terms of the level of importance of fish consumption globally, the main factor that ranks it among the top important foods is the high amount of protein it provides. In this survey, a series of 22 questions were addressed to people aged between 18 and 76+ summing 1017 respondents. This study reflects consumer perception on aquaculture goods and services in Romania. Respondents purchase fisheries and aquaculture products mostly from supermarkets, consider fish organoleptic properties to be very important, but also, they observe the poor supply of Romanian aquaculture products on the market.

Key words*: fish meat, fish stocks, fisheries, market survey, questionnaire.*

GASTROPODS USE AS AN ALTERNATIVE PROTEIN SOURCE IN AQUACULTURE FEEDS - SHORT REVIEW

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Abstract

Alternative protein sources to replace fish meal in aquaculture feeds are continuously sought after. The fish meal industry is unsustainable, from an economic point of view and because of its impact on wild aquatic ecosystems. This review presents the use of gastropod species (class Gastropoda) in aquaculture feeds. Gastropods have been studied for their potential use in aquaculture feeds, mainly as an alternative source of protein to fish meal. Gathered studies from various databases encompass gastropods nutritional value, and their performance in rearing aquatic organisms. Fish meal replacement with meals sourced from gastropods is closely analysed in this paper. Synthesized information from this review will benefit future research on this subject.

Key words*: animal protein, fish rearing, Gastropoda, nutrition.*

STRUCTURAL CHARACTERISTICS OF THE PREDATORY MITE POPULATIONS (Acari-Mesostigmata) AT LOCAL SCALE FROM TWO TYPES OF GRASSLAND ECOSYSTEMS IN THE FĂGĂRAŞ MOUNTAINS - ROMANIA

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Abstract

Soil mites have been used as bioindicators at local, regional or even at national scales. The present study demonstrated that soil microhabitats are characterised by different structural patterns of soil mite populations. This study was conducted in August 2021, in two types of grassland ecosystems (intensely grazed and moderately grazed with sheep) in the Făgăraş Mountains- Romania. At the local spatial scale, 10 transects were established in each grassland. In total 200 soil samples were analysed, revealing the presence of 33 soil mite species, with 93 individuals. Dominant species were Gaeolaelaps nolli and Gaeolaelaps aculeifer. The population characteristics were analysed for each transect and each grassland, using the following indices: taxa diversity, numerical abundance, dominance, evenness, equitability, Shannon-Wiener index of diversity, Bray-Curtis index of Similarity. Making a comparison, in the moderately grazed grassland the species diversity and the numerical density were higher than those from intensely grazed ecosystem.

Key words*: grazed, mite, soil, structure, transects.*

HELMINTH BIODIVERSITY AND HEAVY METAL CONTAMINATION OF *Perca fluviatilis* Linnaeus, 1758 AND *Eustrongylides excisus* Jägerskiöld, 1909 LARVAE FROM THE WETLAND MANDRA-PODA

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Abstract

The study presents the first data on the biodiversity of helminths and helminth communities of European perch (Perca fluviatilis Linnaeus, 1758) from the freshwater ecosystem of the anthropogenically affected protected area Mandra-Poda. Thirty specimens of perch were examined by the method of complete helminthological study. The infection characteristics and the dominant structure of the helminth communities were determined. Helminth communities were analyzed at two levels: infracommunities and component communities. Basic biotic indices are presented. The core species in the helminth communities of perch is Eustrongylides excises Jägerskiöld, 1909 larvae (Nematoda; Dioctophymatidae) (P%=60; MI=7,12;1-51 specimens). New data on the content of heavy metals and their circulation in the system water-sediment-perch and its helminth Eustrongylides excisus have been established. New data on the bioindicator significance of helminths and helminth communities of European perch are discussed.

Key words*: Bioindication, Black Sea Water Basin, ecological indices, European perch, Mandra-Poda.*

NUTRITIONAL COMPOSITION AND HEAVY METAL CONTAMINATION IN SOME FISH FROM BLACK SEA

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Abstract

This study aimed to determine the nutritional value, heavy metals, and micro and macro elements in nine species of fish from the Black sea. Data on the content of proteins, lipids, heavy metals, and micro and macro elements were obtained, and the energy value in kcal/ 100 g and kJ/100 g fresh weight was calculated. The analyzed species can be divided into three groups: with low lipid content (Neogobius melanostomus, Psetta maxima), medium and high lipid content (Sprattus sprattus, Trachurus mediterrneus, Sarda sarda, Mugil cephalus, Belone belone) and very high value (Pomatomus saltatrix, Mullus barbatus ponticus). All seawater belonged to the category of foods with medium and high energy content (more than 170 kJ/100 g) and were a good source of protein (15.52-21.54%). All fish studied are essential magnesium, potassium, and sodium sources. The content of mercury, lead, cadmium, and zinc in all fish examined was below the maximum allowable concentration (MAC). All tested fish can be recommended for safety consumption by the population.

Key words*: toxic metals, nutrients, proximate analysis, seawater fish.*

BIODIVERSITY AND BIOLOGICAL MONITORING OF THE FRESHWATER ECOSYSTEM OF THE MECHKA RIVER, PART OF THE MARITSA RIVER WATERSHED

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Abstract

The present study aims to provide first data on the species composition of the parasites and the structure of the parasite communities of freshwater fish species from the Mechka River. The river is part of the watershed of the Maritsa River in Bulgaria. Mechka River is of type R5 `Semi-mountainous rivers`, and falls into Ecoregion 7, `Eastern Balkans`. The fish were caught in the lower reaches of the river. The biodiversity of fish species` parasites from the Mechka River`s freshwater ecosystem was examined. The structure of the parasite communities of the dominant fish species in the catch from the studied ecosystem is presented. The circulation of the helminth flow is indicated. Based on the research and results, the state of the waters of the Mechka River in the studied section was monitored.

Key words*: Bulgaria, diversity, fish, parasites, water assessment.*

BIODIVERSITY AND WATER QUALITY ASSESSMENT OF THE KAYALIIKA RIVER (TRIBUTARY OF THE MARITSA RIVER) BASED ON BIOLOGICAL QUALITY ELEMENTS

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Abstract

This study aims to provide first data on helminths and helminth communities (component communities and infracommunities) of fish from the freshwater ecosystem of the Kayaliika River. The Kayaliika River is of type R5 `Semi-mountainous rivers`; it is part of the watershed of the Maritsa River on the territory of Bulgaria and falls into the Aegean watershed. For the purpose of the research, fish samples were collected from the lower reaches of the Kayaliika River. The species composition of the helminths of all fish species caught was examined, as well as the structure of the helminth communities of the dominant fish species in the catch. Based on the results obtained from the helminthological research, the circulation paths of the helminth flow were examined; the intermediate hosts of the established helminth species were indicated, and the water quality of the studied section of the Kayaliika River was assessed.

Key words*: Bulgaria, diversity, fish, helminths, water assessment.*

HYDROBIOLOGICAL MONITORING OF TWO RIVERS FROM THE MARITSA RIVER BASIN BASED ON A BIOLOGICAL QUALITY ELEMENT MACROZOOBENTHOS

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Abstract

In 2023, an ecological assessment of the state of two rivers, part of the Maritsa river basin in Bulgaria, was carried out. For the study, benthic macroinvertebrate organisms (macrozoobenthos) were collected during the spring season from the Luda Yana River in the area of the village of Popintsi (Panagyurishte Municipality, Pazardzhik Region) and from the Chepelarska River in the area of Katunitsa village (Sadovo Municipality, Plovdiv Region), designated as biotopes. 512 and 712 specimens of benthic macroinvertebrates were collected from the Popintsi biotope and the Katunitsa biotope, respectively. The macroinvertebrate taxa found from the Popintsi biotope are belonging to 12 orders: Amphipoda, Annelida, Coleoptera, Diptera, Ephemeroptera, Gastropoda, Hemiptera, Lepidoptera, Lumbriculida, Odonata, Plecoptera, Trichoptera. Macroinvertebrates from the Katunitsa biotope are belonging to 11 orders: Amphipoda, Annelida, Diptera, Ephemeroptera, Gastropoda, Hemiptera, Lepidoptera, Lumbriculida, Odonata, Plecoptera, Trichoptera.

Key words*: benthic macroinvertebrates, Bulgaria, Chepelarska River, ecological assessment, Luda Yana River.*

HELMINTOLOGICAL STUDY OF FISH FROM THE FRESHWATER ECOSYSTEMS OF THE LUDA YANA RIVER AND CHEPELARSKA RIVER

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Abstract

In the autumn of 2022, an ecologohelinological study was carried out on 41 and 70 fish specimens, respectively, from the Luda Yana River and the Chepelarska River, falling into the Maritsa River basin in the territory of Bulgaria. The fish from the Luda Yana River were caught from three places (indicated as biotopes) - Popinitsi, Svoboda, and Chernogorovo, and belong to 3 species (Orpheus dace, Squalius orpheus Kottelat & Economidis, 2006; Round-scaled barbel, Barbus cyclolepis Heckel, 1837 and Bleak, Alburnus alburnus Linnaeus, 1758). The fish from the Chepelarska River were caught from one place - the Katunitsa biotope and belong to 4 species (Sq. orpheus, B. cyclolepis, Alb. alburnus, Vardar nase Chondrostoma vardarense Karaman, 1928). In both studied rivers, the dominant fish species caught is Sq. orpheus. The species diversity of the parasites and their ecological indicators are indicated for the non-dominant fish species. New habitats and new hosts have been discovered for some of the established helminth species.

Key words*: Bulgaria, Cyprinidae, ecological indices, helminths, Maritsa River Basin.*

TAILORING WESTERN BLACK SEA AQUACULTURE TO IMPENDING CLIMATE CHANGE: LABORATORY TESTING OF GILTHEAD SEABREAM *Sparus aurata* (Linnaeus, 1758) AS A POTENTIAL CANDIDATE

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Abstract

Climate change calls for the diversification of aquaculture species, seeking alternatives tolerating warmer summer temperatures. In this context, the research on the adaptability of gilthead seabream Sparus aurata (Linnaeus, 1758) for Romanian marine aquaculture was performed. The experiment demonstrated the possibility of transferring three months old juveniles from a 36‰ salinity into Black Sea water (mean salinity 15‰), without any mortality. The evolution of the stress induced by the difference in salinity was carefully monitored. Glycemic levels between 68-82 mg/dl before, 157-171 mg/dl one hour after the sudden change in salinity and 115-124 mg/dl at 24 hours were documented, respectively. Corroborated with the color changes and the resumption of active feeding and schooling behavior, it can be inferred that the use of the species is feasible in Romania. An average biomass increase comparable to relevant literature was documented: from seven grams initially to 300 grams. The biochemical analysis of the meat also revealed a balanced composition. Overall, S. aurata proved a viable candidate for Western Black Sea cage aquaculture in a rotational system, complementary to colder water species.

Key words*: aquaculture, adaptability, Black Sea, rotation, seabream.*

KRILL OIL SUPPLEMENTATION AMELIORATES FRUCTOSE-INDUCED HYPERTRIGLYCERIDEMIA IN *Carassius auratus calico*

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Abstract

Fructose is a highly lipogenic sugar and excessive fructose intake stimulates endogenous glucose production and lipid synthesis in the liver. Therefore, the present study aims to investigate the amelioration of liver impairment induced by high fructose dietary doses following dietary supplementation with krill oil. 45 exemplars of Carassius auratus calico weighing 150 grams, were randomly distributed into three experimental diets including V1 - Control, fish fed with a normal diet, V2 - fish fed with 1% fructose, V3 - fish fed with 2% fructose, respectively, at the end of 90 days: V1 - Control, fish fed with a normal diet, V2 - fish fed with 1% krill oil, V3 - fish fed with 2% krill oil. The blood tissues were collected to analyze hematological parameters (red blood cell counts (RBCc, x 106/µl), the hematocrit (PCV, %), hemoglobin concentrations (Hb, gl/dl,) HEM, VEM, CHEM and serum biochemistry parameters (GLU, TRIG, ALT and AST). In addition, the organosomatic indices (HIS, VSI) and proximate composition (water, lipid, ash, and protein content) were analyzed. No differences between the control and treated fish from the two experimental diets were observed in hematological parameters. After 90 days fructose-treated fish showed increased AST and ALT levels. Our results showed that daily krill oil supplementation in the Carassius auratus calico prevented fructose-induced hypertriglyceridemia.

Key words: *aquaculture krill oil, hematological and serum biochemistry parameters, organosomatic indices.*

EFFECT OF LIGHT INTENSITY ON GROWTH PERFORMANCE, PHYSIOLOGICAL STATE AND TISSUE COMPOSITION OF *Polyodon spathula* (Walbaum, 1792) JUVENILES

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Abstract

This study aimed to investigate the effect of light intensity on the growth performance, hematological profile, and biochemical composition of muscle tissue of paddlefish juveniles, reared in a recirculating aquaculture system (RAS). Two experimental variants were created: V1 - where the rearing units have green color, and the average of the light intensity was 105 lx (mean fish weight was 21.65 ± 0.6 g), and V2 - where the rearing units have white color, and the average of the light intensity was 30 lx (mean fish weight was 22.15 ± 0.8 g). Fish were fed at an intensity of 2.5% BW for 48 days. Growth of juvenile paddlefish under 30 lx was significantly better than that of paddlefish under 105 lx ($p < 0.05$), as indicated by final weight (1158.20 ± 21.90 g), specific growth rate (2.18% ± 0.07%/day) and feed conversion coefficient (0.80 ± 0.28 g/g). In conclusion, the paddlefish juveniles can adapt to various light intensities and grow favorably under low light conditions in a recirculating aquaculture system.

Key words*: growth performance, hematology, light intensity, paddlefish, recirculating aquaculture systems (RAS).*

CAROTENOIDS IN SALMONID AQUAFEEDS: A REVIEW OF USE AND EFFECTS

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Abstract

This review aims to analyse the use and effects of carotenoids in salmonid aquafeeds. Species of the family Salmonidae are of great interest for aquaculture due to their many properties, like fast growth and nutritional quality. Some species from this family are among the most farmed fish in the world. Thus, there are many studies on different farming technologies, fish biology, market dynamics and others. However, there are always new challenges in the aquaculture of salmonids, being a continuously improving activity. Consumers are becoming more considerate about what they choose to buy and consume. Thus, some aspects emerge as great influencers in the buying decisions of consumers, such as animal welfare, in addition to usual influencing factors, like product freshness and colour. A category of ingredients used in the salmonid aquaculture are carotenoids. They are pigments supplemented to diets for colouring the fish flesh, making it more appealing to consumers. However, some other benefits can also be observed, especially on the health of fishes. Be it synthetic or natural, carotenoids have become a largely used ingredient in salmonid aquafeeds.

Key words*: carotenoids, physiological effects, salmonids, synthetic.*

CHARACTERISTICS OF EPIGEIC INVERTEBRATES OF SOME NATURAL FORESTS AND PLANTATIONS FROM THE WESTERN PLAIN (ROMANIA)

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Abstract

The aim of this paper is to highlight some interspecific relationships existing in epigeic invertebrate communities in natural forest ecosystems and plantations in the Western Romanian Plain. Nine sites were studied: 2 natural forests and 7 plantations. The material was collected with Barber traps during the summer season. The fauna was identified at the higher level of the species and Coleoptera: Carabidae - at species level, using specific identification keys. The following aspects were analysed: taxonomic composition, status of the taxa in the local coenoses from the point of view of their constancy classes in the samples, as well as the linear correlation coefficient (r) between the predatory taxa but also between the predators and their food sources. The results of this study highlight the importance of the coenotic heterogeneity in ensuring complex and long-lasting interspecific relationships along the path of ecological succession, resulting in a quality supply of environmental services provided by forests.

Key words: *forests, invertebrates, plantations, populations' structure, Western Plain.*

ADVANCING THE SUSTAINABILITY OF AQUACULTURE THROUGH ECOSYSTEM SERVICES MONETIZATION

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Abstract

Most of the human interaction with nature affects ecosystems, influencing human life quality. The aquaculture industry plays a pivotal role in global food security, but its growth poses multifaceted challenges to environmental conservation, urging the implementation of sustainable measures to safeguard aquatic ecosystems. In this context, Payments for Ecosystem Services (PES) have emerged as a pioneering approach to incentivize and ensure sustainable practices within the aquaculture sector. This study emphasizes the fundamental role of PES, it highlights its substantial impact in ameliorating environmental repercussions, conserving biodiversity, and enhancing water quality within aquacultural zones. The study underscores the importance of collaborative efforts among stakeholders and advocates for effective monitoring systems to reinforce the efficacy of PES initiatives in fostering sustainable aquaculture practices. By centering on Romania's aquacultural context, this paper provides crucial insights into the implementation of PES within diverse socio-economic and environmental landscapes, contributing pertinent perspectives to the overarching discourse on sustainable aquaculture practices worldwide for a safe future.

Key words*: aquaculture, biodiversity conservation, economic incentives, environmental services, sustainable practices.*

OVERALL EFFECTS OF CLIMATE CHANGE ON ECONOMICALLY VALUABLE FISH POPULATIONS IN THE DANUBE RIVER

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Abstract

The ecosystems of the Danube River basin exhibit remarkable biodiversity, housing over 2,000 plant species and more than 5,000 animal species. This places the Danube among Europe's most valuable rivers in terms of aquatic life diversity, with a total of 103 identified species. The Danube is increasingly affected by climate change, impacting the hydrologic cycle and the availability of food and water resources. The effects of climate change are already observable and projected to intensify, notably in increased frequency and intensity of extreme weather events such as heatwaves, drought periods, and floods. In this paper, we aim to present the impact of climate change on economically valuable fish within the Danube River. We have determined the abundance of these species and analyzed the correlation between recorded temperatures and the river's water level. Given the Danube's unique variety of species, we will highlight the importance of protecting and conserving this valuable ecosystem amidst the escalating climate threats.

Key words: *abundance, aquatic ecosystems, carp population, environmental factors, predatory species.*

EVALUATION OF BIOCHEMICAL MEAT COMPOSITION OF *Acipenser ruthenus* AFTER DIETARY IMAZALIL EXPOSURE

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Abstract

Fish play a crucial role as bio-indicators for assessing aquatic contamination, providing an effective and reliable monitoring system to identify and predict the harmful effects of pollutants resulting from human activities. Recently, imazalil (IMZ) has been identified as a contaminant in the Danube with unsettled toxicity concerns for both fish health and fishery products consumption. Our study presents the results of the biochemical fish meat composition after in vivo dietary exposure to IMZ of 17-month-old Acipenser ruthenus juveniles. The following experimental variants were analysed: Vo - 0 µg IMZ/kg bw/day, V1* - 1 µg IMZ/kg bw /day, and V25* - 25 µg IMZ/kg bw/day. IMZ was added to fish feed using salmon oil as a binder. After 21 days, parameters such as proteins, lipids, ash, and water content were assessed to determine the effects of IMZ exposure on the nutritional quality of fish meat. In conclusion, the addition of IMZ in the diet of Acipenser ruthenus resulted in a significant impact ($p<0.05$) on the protein content of the fish meat, while ash, water, and lipid content remained unaffected ($p>0.05$).*

Key words*: biochemical analysis, feed exposure, fungicide, imazalil, meat.*

HEPATOPROTECTIVE EFFECT OF *Ulva lactuca* AND *Spirulina platensis* IN *Cyprinus carpio* EXPOSED TO IMAZALIL

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Abstract

The objective of the current investigation was to assess the hepatoprotective capabilities of two algal species, Ulva lactuca and Spirulina platensis, in carp (Cyprinus carpio) fingerlings subjected to imazalil exposure. Consequently, the experimental groups were simultaneously exposed to the fungicide (5mg/kg feed) and provided with feed containing either Ulva lactuca alone (IMZ-Uv variants – 5 g/kg ulva), Spirulina platensis alone (IMZ-Sp variants – 5 g/kg spirulina), or a combination of both algae (IMZ-Uv-Sp variants – 2.5 g/kg ulva and 2.5 g/kg spirulina). Two control variants were employed in the experiments: a negative control receiving normal feed and a positive control receiving feed with 5mg/kg imazalil. Each variant involved 15 fish per tank, and after the experiment, five fish from each tank were utilized for biological samples. The assessment of biochemical serum parameters and oxidative stress markers for each specimen revealed that imazalil induced alterations in biochemical parameters, resulting in physiological dysfunctions in carp. However, the administration of algae, in particular Spirulina platensis, demonstrated significant potential in mitigating the adverse effects of imazalil.

Key words*: carp, fish blood, imazalil, seaweed, spirulina.*

CULTIVATION OF KALE (*Brassica oleracea acephala* `Nero di toscana`) IN AN AQUAPONIC SYSTEM

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Abstract

This research aimed to assess the development and yield of kale (Brassica Oleracea var. Acephala) grown within an aquaponic framework using Carassius auratus. The study examined four distinct kale stocking densities: 14 plants×m-2, 21 plants×m^{-2}, 28 plants×m^{-2}, and 41 plants×m^{-2} respectively. At the end of the trial, growth parameters such as plant height, leaf area, and biomass production were measured. The findings revealed notable variations in kale growth among the tested stocking densities, with the 28 plants×m^{-2} density demonstrating superior productivity, characterized by increased biomass and overall vigorous growth. Furthermore, the aquaponic system demonstrated efficacy as a sustainable method for cultivating kale, utilizing fish waste as a valuable source of nutrients.

Key words*: aquaponics, Carassius auratus, kale productivity,.*

REVIEW REGARDING THE PROTECTIVE EFFECTS OF GREEN MACROALGE AGAINST INDUCED TOXICITY IN ANIMAL MODELS

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Abstract

Green macroalgae represent a significant and cost-effective alternative feed source for aquatic and terrestrial animals, boasting abundant nutritional and pharmaceutical attributes. Notably, they encompass a diverse range of bioactive compounds, including phenolics and polysaccharides, which are valuable for animals' health since they offer advantageous properties, such as antimicrobial and antioxidant effects, contributing to the immunity and disease resistance. In the last decade, many reports have highlighted the positive impacts of marine macroalgae on the health of animals. Among them there are few studies highlighting the protective role of macroalgae or macroalgae extracts against toxicity induced by different toxic compounds. The goal of the present review is to identify and to summarize relevant information related to protective effects of seaweed and seaweed-isolated compounds and extracts having biological activity against induced toxicity in animal models.

Key words*: extracts, health, macroalgae, toxicity.*

DETERMINATION OF THE MEAT BIOCHEMISTRY OF PONTIC SHAD *Alosa immaculata* (Bennett, 1835) DURING MIGRATION

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Abstract

The biochemical analysis of fish tissue is considered a dependable indicator of the fish`s quality, nutritional content, physiological condition, and environmental habitat. Alosa immaculata (Bennett, 1835) is a migratory fish species with great ecological and economic importance, which undergoes a remarkable journey during its migration. As A. immaculata embarks on its migration, the dynamic biochemical changes in its meat composition offer valuable information that contributes to a comprehensive understanding of the species` adaptation to the challenges posed by migration. In this context, this study aimed to investigate the meat biochemistry of Pontic Shad during the period of migration from two different points: Station 1 - Saint Gheorghe Branch, Station 2 - Sulina Branch, and Station 3 - Brăila, km 169 and km 197 of the Danube River. Significant differences ($p<0.05$) were recorded in the level of water, lipid, and ash, while no differences were recorded in the level of proteins ($p>0.05$). Notably, the lipid content in the meat samples from the Sulina exhibited the highest percentage, while the protein content in the samples from the St. Gheorghe arm surpassed that of the Sulina and Brăila, indicating differences in nutritional profiles that could be attributed to physiological adaptations during migration.

Key words*: Danube, fish, lipids, proteins, reproduction migration.*

EFFECTS OF SOME PHARMACEUTICAL POLLUTANTS ON FISH HEALTH, OXIDATIVE STRESS, AND ANTIOXIDANT DEFENSE MECHANISM AT FISH: A REVIEW

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Abstract

In recent years, the consumption of pharmaceutical products has substantially increased. Lately, the European Union (EU) has reported the use of over 3000 medicinal substances in human medicine, such as analgesics, anti-inflammatories, contraceptives, antibiotics, beta-blockers, antihistamines, anesthetics, vitamins, hormones, etc. An inevitable consequence of the increasing global consumption of pharmaceutical products is the high level of contamination of surface and groundwater with these biologically active medications. Exposure of aquatic organisms to these substances can lead to their direct or indirect bioaccumulation in tissues, resulting in negative physiological, biochemical, or behavioral consequences. Recent studies have indicated that pharmaceutical products induce oxidative stress states linked to the production of reactive oxygen species (ROS), potentially triggering various toxic effects. In this context, this review summarizes the effects on fish health, oxidative stress, and antioxidant defense caused by exposure to some pharmaceutical pollutants.

Key words*: fish oxidative stress, pharmaceutical pollutants, ROS species.*

ANALYSIS OF THE MAIN CAUSES THAT MAY CONTRIBUTE TO THE DECLINE OF SOME ECONOMIC VALUE FISH STOCKS IN THE DANUBE RIVER

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Abstract

The paper presents the main causes that can contribute to the decrease of fish stocks with economic value in the Danube River, based on an analysis of both the recorded fishing catches and the quantities of fish retained following the control actions carried out by the authorities with the right of inspection and control with the aim of combating fish poaching, as well as the normative regulatory acts in the field of fishing. A broader perspective involves analysing the environmental factors and their role in the decline of economically valuable fish species in the Danube. From the analysed data, it was found that following the specific actions organized and carried out by the competent authorities, significant quantities of fish with economic value, originating from illegal fishing, were confiscated, thus resulting in the fact that both the regulations that sanction acts of poaching and the capacity of the responsible authorities are insufficient.

Key words*: administrative capacity, environmental factors, fisheries management, illegal fishing, IUU.*

CHANGES IN LEUKOCYTE PROFILES OF *Acipenser ruthenus* JUVENILES INDUCED BY IMAZALIL DIETARY EXPOSURE

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Abstract

Among fungicides, imazalil has been identified as a concerning contaminant in aquatic ecosystems of the Danube basin, including sturgeon habitats for reproduction. Due to their migratory life cycle, sturgeons could be particularly sensitive to these biotope alterations. The major objective of the present scientific approach was to study the leukocytes' reaction of Acipenser ruthenus juveniles subjected to environmental concentrations of this contaminant. The experimental exposure lasting 21 days includes sterlet juveniles from aquaculture, aged 17 months with an initial average size of 38.94 ± 2.88 cm and an average weight of 208.30 ± 44.90 g. The imazalil was distributed in the fish food, at two concentrations:1 µg/kgbw/day (V1) and 25 µg/kgbw/day (V25*), while the control groups (V*) received only the food treated with oil salmon that was used as a binder for imazalil. Our findings indicate that the high concentration of 25 µg/kgbw/day imazalil interferes with the sterlet sturgeon's immune system by modifying the differential leukocyte counts and the blood cell morphology.*

Key words*: blood, feed exposure, fungicide, imazalil, leukocytes.*

INTEGRATING FRESH WATER SWAN MUSSEL *Anodonta cygnea* IN POLYCULTURE WITH FISH: ESTABLISHING A CONTROLLED ZONE WITHIN THE LOWER SECTION OF A FISH CAGE FARM

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Abstract

Integrated multi-trophic aquaculture (IMTA) presents opportunities for transforming diverse aquaculture-generated waste into revenue streams through the growth of species of economic and biological value. In fresh water, swan mussel Anodonta cygnea (Linnaeus, 1758) exhibit the capacity to purify aquaculture effluent by extracting nutrients contained within it. Also, it represents a value food source for fish, like Black carp, and human consumption. The study aimed to propose an IMTA strategy for freshwater cage fish farming. The feed provided to caged fish is not entirely consumed, serving as the foundation of the food chain for other organisms like swan mussels. To enhance feed efficiency for the fish, which settles at the bottom of the culture ponds where floating fish cages are located, individual net compartments are installed to accommodate the swan mussels. This association yields positive effects across all levels of the food chain by reducing losses and generating a living raw material that falls within the dietary range of other species. Also, through the feeding process, swan mussels filter the water and prevent the undesirable phenomena of decomposition of organic matter and decrease in oxygen concentration, which occur with increasing water temperature. This experiment applies the concept of IMTA by the simultaneous activity of fish and swan mussel farming, which results in minimizing economic losses, maximizing profit and environment protection by cleaning the water.

Key words*: aquaculture, bivalve, cage culture, IMTA, wastes valorisation.*

A HISTOLOGICAL STUDY OF THE ZEISSL MEMBRANE FOUND IN THE DIGESTIVE TRACT OF THE DANUBE SALMON *Hucho hucho* (Linnaeus, 1758)

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Abstract

The digestive system of fish is different from one species to another, depending on the type of food ingested. Danube salmon Hucho hucho (Linnaeus, 1758) is a critically endangered species of the Salmonidae family with the threat of extinction looming large, therefore conservation efforts are urgently needed. This study presents a detailed microscopic analysis of the Zeissl membrane in Danube salmon, through histological means. The biological material analyzed consisted of six fish raised in a specialized breeding farm for restocking purposes. Samples were collected from the gastrointestinal tract and processed using histological paraffin embedding. The Zeissl membrane was present in all studied segments, but its structure and development varied. It comprised the stratum compactum (SC) and stratum granulosum (SG). The SC formed a continuous membrane with unequal thickness in most of the studied segments, except for the cardia area of the stomach, where it appeared discontinuously, and the duodenum, where it only appeared between the apertures of the pyloric caeca. Aside from its role in limiting gastrointestinal distension, it may have other implications for the morphophysiology of the Danube salmon digestive tract.

Key words*: stratum compactum, stratum granulosum, Zeissl membrane.*

RESEARCH ON THE EVOLUTION OF MORPHOLOGICAL INDICES IN THE *Cyprinus carpio* - SPECIES DURING THE COLD SEASON IN THE CONTEXT OF CLIMATE CHANGE

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Abstract

Due to the increasingly warm winters of the last 20 years, the wintering of cultured carp is achieved with increasing numerical and weight losses. Water temperatures during the winter period reach 10-12^{0}C, temperatures that intensify the metabolism and set the fish material in motion. Because these temperatures are for short periods, no natural food grows in the water. The paper presents the results of the research carried out in the cold seasons of 2020-2021, 2021-2022 and 2022-2023, on cultured carp aged two summers, from the Research and Development Station for Fisheries Nucet. Wintering was done in earthen ponds, in two variants: variant V1 - without feed distribution and variant V2 - with feed distribution. In view of this study, somatic measurements were carried out, both in autumn and in spring, to assess the change in the values of the condition coefficient, survival percentages (Sv %) as well as the decrease in weight and number, during the evolution of a cold season period, in the context of climate change.

Key words*: climate changes, cold season, Cyprinus carpio, morphological indices.*

QUALITY ASSESSMENT OF TRADITIONAL SMOKED ARCTIC CHAR, *Salvelinus alpinus* (Linnaeus, 1758)

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Abstract

Regular consumption of fish can contribute to a more balanced and healthy diet. Incorporating fish into one`s diet is important for maintaining a healthy and sustainable lifestyle. The processes of traditional smoking undergo a complex series of steps that significantly influence its quality, nutritional composition, and sensory characteristics. To address this issue, a study was conducted to evaluate the meat quality and salt concentration of traditionally smoked Arctic char at different stages of the smoking process (fresh meat, salted meat, desalted meat, and smoked meat). All the physicochemical measured parameters varied significantly during the smoking processes, with the quality of the products remaining high. The final product, traditionally smoked trout, experiences a substantial decrease in water content through drying, salting, desalting, and smoking at high temperatures, increasing dry matter content. Furthermore, there is a significant boost in protein content in smoked trout compared to fresh, salted, and desalted meat.

Key words*: human health, traditional smoking, salmonids, smoked trout.*

THE INFLUENCE OF THE FOOD TYPE ON THE DEVELOPMENT OF PIKE-PERCH (*Sander lucioperca*, Linneaus - 1758) IN THE POST-EMBRYONIC PERIOD

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Abstract

The culture of the pike-perch(Sander lucioperca L., 1758), in intensive aquaculture, is difficult to achieve due to its character as an active predator in the water mass. In recent years, significant quantities of pike-perch are requested by consumers, being more and more numerous those who prefer this species. Choosing the most appropriate food category is very important, because it can make the difference between the success or failure of development in the post-embryonic development stage. The experimental works for the development of the pike-perchtook place in three variants, with different food being administered, as follows: variant 1 - zooplankton (Daphnia sp.) was administered, variant 2 - prussian carp larvae (Carrassius gibelio) were administered and variant 3 - granulated feed was administered.The growth was carried out in "Evos" fiberglass tanks. The results obtained were very good in variant 2. Good results were also obtained in the other two variants (variant 1 and variant 3). The decision of the way of post-embryonic development remains at the farmer's choice..

Key words*: food, post-embryonic development, Sander lucioperca, survival, weight.*

ASSESSMENT OF THE ZOOPLANKTONIC COMMUNITIES IN AQUATIC BASINS IN THE SOUTHERN AREA OF ROMANIA

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Abstract

In the present work, the results of the assessment of the state of zooplankton communities are presented from different types of water bodies. For the study, water samples were collected and analyzed from three types of water basins: systematic pond (EC 1 lfov and EC 1 Cazaci - SCDP Nucet), semi-systematic pond (Iaz no. 7 Crevedia) and reservoir (Bunget 2). The research was carried out in 2023, and the results highlighted the fact that the composition of the zooplankton in the aquatic ecosystems studied was made up of species belonging to the taxonomic groups: Rotifera, Copepoda and Cladocera. Based on these aspects, the qualitative and quantitative structure of the zooplankton in the studied water basins was established. Were identified 24 taxa (16 taxa - Rotifera, 3 taxa - Copepoda and 5 taxa - Cladocera). The weight of each taxonomic group is different in the three types of ecosystems: in the systematic pond -type water basins, cladocerans predominate (38.7% in EC 1 Cazaci and 44.0% in EC 1 Ilfov), in semi-systematic pond Iaz no. 7 Crevedia rotifers predominate (69.5%) and in Bunget 2 reservoir copepods predominate (49.5%).

Key words*: reservoir, semi-systematic pond, systematic pond, water basin, zooplankton.*

SPATIAL - TEMPORAL DISTRIBUTION OF THE EURASIAN OTTER (*Lutra lutra*) POPULATION SOMOVA AQUATIC COMPLEX - PARCHEȘ, ROMANIA

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Abstract

The purpose of this study was to obtain information about otter population in terms of spatio-temporal distribution, abundance and/or density and other ecological characteristics of the otter population in the Somova - Parcheș aquatic complex. Because the otter is a solitary, nocturnal animal with a large distribution area, direct methods of assessing population numbers are difficult. That is why indirect methods were used in this study, such as: counting footprints, feces, latrines, territory marking places. The abundance of presence signs is considered a measure of the activity of the species. During the study period, a number of 256 signs of presence were inventoried (spraints, jellies, footprints) and 2 specimens of otter were identified (1 dead adult and a live chick both found in fishing nets). The greatest abundance of presence signs is found on the wooded inner hills of the lacustrine complex. Starting from the west to the east of the complex we can consider 4 areas with a high density of signs of presence. The most abundant signs of presence were found in the winter season (33.2%).

Key words*: aquatic complex, eurasian otter, Somova - Parcheș, spraint.*

PHYSICOCHEMICAL WATER PARAMETERS - LIMITING FACTORS ON THE RAINBOW TROUT GROWTH IN RECIRCULATING AQUACULTURE SYSTEMS

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Abstract

The rainbow trout raised in the recirculating system is dependent on the water quality, which must have certain specific parameters. Using specialized literature, the current research aimed at improving the rainbow trout growth conditions in different situations was approached and analyzed. The water parameters differ depending on the season, feed, photoperiod, filter system. The obtained results showed that the most important limiting factors of the physicochemical parameters of water are: temperature, dissolved oxygen, ammonia, nitrites, pH and turbidity. Trout farming in recirculating systems involves high energy consumption and high equipment cost. By optimizing, monitoring and strictly complying with the water physicochemical parameters in RAS, it is possible to improve water quality and obtain large productions of fish, which can quickly amortize the initial investments and profit gain.

Key words*: aquaculture, limits, management, RAS, water chemistry.*

NEW DATA FOR HELMINTH FAUNA OF Bufonidae (Amphibia) IN THE REPUBLIC OF MOLDOVA

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Abstract

The paper presents data on the identification of the helminth fauna structure of Bufo bufo Linnaeus, 1758 and Bufotes viridis Laurenti, 1768 species, ecaudata amphibian from Bufonidae families, and the determination of its role as bioindicators and as vectors for parasitic agents specific to animals. As result of helminthological investigations during 2013-2023 years, in Bufonidae species 19 helminths species was established. The helminthological research carried out on the species Bufo bufo highlighted the presence of 19 species of helminths, of which the predominant parasitic agents are trematodes which make up 47.4%, nematodes with 31.5%, acanthocephals with 15.8% and monogeneans with 5.3%. In Bufotes viridis species, the presence of 18 species of helminths was established, of which helminth species from the trematode class represent the predominant group with 44.4%, nematodes with 38.9%, acanthocephales with 11.1% and monogeneans with 5.6%. The helminthological researches were carried out depending on the age of the host, the type of habitat and the area. The bioindicator significance of the established parasite species was presented for an ecological assessment of the studied area.

Key words*: Bufo bufo, Bufotes viridis, helminth fauna, Republic of Moldova.*

NEW DATA FOR HELMINTH FAUNA OF *Rana temporaria* (Linnaeus, 1758) IN THE REPUBLIC OF MOLDOVA

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Abstract

The paper presents data on the identification for the first time in Moldova of the helminth fauna structure of Rana temporaria and the determination of its role as bioindicators and as vectors for parasitic agents specific to animals. As result of helminthological investigations during 2014-2023 years, 19 helminths species was established. The predominant group are trematodes with 57.8% of cases, nematodes with 31.6% of cases, acanthocephala and monogeneans with 5.3% of cases each. According to the assessment of the main helminthological indices, it was established that the species is infested with helminths in 96.3% of cases. When evaluating the data and the composition of helminth species, it was found that adult forms of helminths are predominant over larval forms, so that, when the host species is infected with trematodes, 9.1% are metacercariae, and 90.9% are the adult forms, when the host species is infected with nematodes 33.3% are the larval stages, and 66.7% are the mature forms, when infesting the host species with acanthocephals and monogeneans, it was established that the helminth species are an adult form, each constituting 5.3%.

Key words*: bioindicators, Moldova, parasitic agents, Rana temporaria, vectors.*

THE INFLUENCE OF SELECTED ENVIRONMENTAL FACTORS ON COMMON CARP (*Cyprinus carpio*) EMBRYONIC DEVELOPMENT AND HATCHING

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Abstract

Changes in the electromagnetic environment and increasing pollution of the environment are significant threats to animals including fish. In this study we made an attempt of determining some effects of geomagnetic field disturbances (hypogeomagnetic conditions), 1800 MHz electromagnetic field, and a commonly used herbicide (Roundup - the concentrations applied in the experiment corresponded to 0.1; 0.5 or 5 mg/l of the active ingredient) on common carp (Cyprinus carpio) embryonic development and hatching. In the periods of 24 and 48 hours after the start of incubation and then in every 6 hours till the end of the experiment the percentage of dead eggs, the percentage of hatched larvae, and the percentage of deformed larvae were determined. The research conducted showed that the deprivation of the geomagnetic field accelerated the hatching of larvae; a reduction in hatchability was also observed, while exposure to the electromagnetic field resulted in an increase in the percentage of finally hatched larvae (statistically insignificant changes). Roundup exposure resulted in increased mortality, reduced hatchability, and an increased percentage of deformed larvae (statistically significant changes).

Key words*: fish, embryogenesis, GMF, EMF, herbicide.*

EFFECT OF DIETARY PROTEIN LEVEL ON GROWTH, HEMATOLOGICAL PROFILE, AND MEAT BIOCHEMICAL COMPOSITION OF JUVENILE EUROPEAN CATFISH

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Abstract

This study aimed to evaluate the influence of the protein level from fish feed on the growth dynamics, hematological profile, and meat biochemical composition of juvenile European catfish, Silurus glanis (Linnaeus, 1758). In this context, 508 juvenile European catfish, with an average weight of 33 ± 1.80 g/fish, were reared in a recirculating aquaculture system (RAS). Fish were fed with two different proteins: VE 41 - fish feed with 41% protein content, and VE 50 - fish feed with 50% protein content. After 35 days, the results regarding the growth performance revealed a better feed conversion ratio (FCR - 1.03 g/g) and specific growth rate (SGR - 2.02%/day) in the VE50P. Also, fish meat's hematological profile and biochemical composition showed a similar trend. In conclusion, the fed protein content plays an essential role in the digestibility and efficiency of nutrient utilization, on the welfare and nutritional quality of the final product.

Key words*: biochemical composition, European catfish, growth,.*

REVIEWING THE POSITIVE IMPACT OF SPIRULINA ON THE HEALTH OF FISH

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Abstract

Aquaculture plays a vital role in global protein production, underscoring the significance of preserving the health and well-being of farmed fish. Spirulina, a blue-green microalgae, is emerging as a promising dietary supplement in aquaculture due to its rich nutritional profile and potential health benefits. This systematic review delves into the existing literature to examine the impact of Spirulina supplementation on fish health. After analysing the selected studies, it was found that various fish species fed with Spirulina-enriched diets showed improved growth, enhanced immune responses, and increased antioxidant capacity. The presence of bioactive compounds, especially phycocyanin, contributes significantly to these health benefits. Despite challenges in determining optimal dosage and addressing environmental considerations, the incorporation of Spirulina into fish diets shows potential for enhancing aquaculture sustainability and productivity. Therefore, this review highlights Spirulina's potential as a beneficial dietary additive in maintaining the general health and welfare of cultured fish.

Key words*: Spirulina, fish health, enriched diets, aquaculture.*

INFLUENCE OF PROBIOTIC DIETS ON THE GROWTH AND WELL-BEING OF *Acipenser baerii* SPECIES IN A RECIRCULATING AQUACULTURE SYSTEM

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Abstract

In this study, the impact of a commercial probiotic (PC) on the growth and well-being of siberian sturgeon (Acipenser baerii, Brandt, 1869) in a recirculating aquaculture system was investigated over 63 days. Four experimental groups were created: a control group (A1) received a commercial feed with 45% protein and 15% lipid, while three others (A2, A3, A4) had the commercial feed supplemented with 0.2 g PC kg-1, 0.4 g PC kg-1, and 0.6 g PC kg-1, respectively. Biometric measurements and blood analyses were conducted to assess growth and well-being of the biological material. Probiotic addition improved the growth performance in all experimental groups compared to the control. Erythrocytes, hemoglobin, and leukocytes showed higher mean values in the experimental groups. Serum glucose significantly decreased in the experimental groups ($p<0.05$), while total serum proteins increased with probiotic diets. Protein and lipid accumulation in muscle tissue was observed in all groups fed probiotic diets, indicating a positive influence on the growth and well-being of Acipenser baerii in recirculating aquaculture systems.

Key words*: growth, well-being, sturgeon, aquaculture.*

HOW ONE HEALTH AND ONE WELFARE CAN STRENGTHEN THE EVIDENCE OF A MANAGEMENT PROCEDURE - A CASE STUDY OF EYESTALK ABLATION IN FARMED SHRIMP

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Abstract

One Health is connected with the One Welfare through links between animal and human welfare, and with sustainable animal-keeping systems. This connection fosters interdisciplinarity, and helps ensure human and animal wellbeing, while addressing more effectively current societal challenges in a more sustainable way. There is a knowledge gap regarding some species-specific operational welfare indicators in some aquaculture species such as crustaceans with potential to impact human wellbeing, and justifying a One Welfare approach. A review of the scientific literature based on PRISMA protocols has been carried out within this study. The review focuses on pain indicators and nociception, and the potential impact on the welfare of shellfish, as well as on the physiological and molecular mechanisms associated with the use of eyestalk ablation (EA) in adult female shrimp in aquaculture facilities. Through the One Health and One Welfare approaches, an assessment of whether the EA procedure is valid for use in shrimp management protocols was also carried out. The case study concluded that alternatives to EA should be sought to ensure compliance of this practice with the One Health and One Welfare concepts.

Key words: *aquaculture shrimp, eyestalk ablation, one health*, *Penaeus spp.*

HELMINTH FAUNA OF *RANA DALMATINA* (BONAPARTE, 1840) IN THE REPUBLIC OF MOLDOVA

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Abstract

The paper presents data on the identification for the first time in Moldova of the helminth fauna structure of Rana dalmatina Bonaparte, 1840, and the determination of its role as bioindicators and as vectors for parasitic agents specific to animals. As result of helminthological investigations, 18 helminths species was established. The predominant group are trematodes with 61.1% of cases, nematodes with 27.7% of cases, acanthocephalan and monogeneans with 5.6% of cases each. According to the assessment of the main helminthological indices, it was established that the species is infested with helminths in 83.3% of cases. When evaluating the data and the composition of helminth species, it was found that adult forms of helminths are predominant over larval forms, so that, when the host species is infected with trematodes, 27.3% are metacercarias, and 72.7% are the adult forms, when the host species is infected with nematodes 20.0% are the larval stages, and 80.0% are the mature forms, when infesting the host species with acanthocephalans and monogeneans, it was established that the helminth species is an adult form, each constituting 5.6%.

Key words*: Bioindicators, Moldova, parasitic agents, Rana dalmatina, vectors.*

THE EFFECT OF PRIVATIZATION ON THE SUSTAINABILITY OF THE ROMANIAN ACVACULTURE

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Abstract

Privatization emerged as a consequence of nationalization and remains an ongoing contemporary process. After the fall of the communist regime in Romania, the Romanian economy has moved to a competitive market economy from the centralized economy based on the plan-based leadership system. A new economic system based on the requirements of the free competitive market was desired, respecting the principles of economy, sustainability. The paper tries to answer the question of how the sustainability of the aquaculture sector was influenced during this period. The study concludes that the transition that included privatization brought about changes for which the aquaculture sector was not fully prepared. Following the impact, a large part of the companies was liquidated, the sector could not cover the needs of fish consumption in Romania. The way to change the type of property including its management requires the wisdom to learn from the experiences of others, from their own experience, more that the privatization process in Romania still has a lot of potential.

Key words*: economy, fish farming, property right, public goods.*

THE PHYSIOLOGICAL EFFECTS OF SOME STRESS INDICATORS IN RAINBOW TROUT RAISED IN DIFFERENT SYSTEMS

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Abstract

Regardless of the accuracy of the technology implementation, the final quality of the fish is also influenced by the conditions to which it is subjected after being extracted from the rearing pond. In the present case study, we proposed an analysis of the physiological reaction of the stock after extraction from the growth ponds. Among others, we were particularly interested in the level of the stress hormone, determined in the samples taken in the study under the conditions of the application of certain stressors. In contrast, comparison of the amount of glycogen led to obtaining very distinctly significant statistical fluctuations (the mean for specimens reared in semi-intensive system was 2.314 ± 0.638 and for those grown in intensive system 1.980 ± 0.822). Growth hormone varied between 0.504 ± 0.46 in the case of semi-intensive system and 0.694 ± 0.22 ng/ml for intensive system. The values obtained for cortisol showed a significant influence of stress factors on the studied trout. The stress hormone level rises in correlation with both the intensity and type of stressors, starting from the moment the fish are removed from the ponds.

Key words: *growth system, hormones, salmonids, stressors.*

MORPHOLOGICAL PARTICULARITIES OF THE SNOW LEOPARD SKULL - IRBIS (*Panthera uncia* Schreber, 1775) CASE STUDY

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Abstract

The study describes the morphological characteristics of the panther leopard skull (Panthera uncia Schreber, 1775). The skull particularities are valuable elements necessary for species identification. Following the analysis, the following conclusions emerged: the existence of an interfrontal fossa, elongated in an oro-aboral direction, located at the level of the interfrontal sagittal suture; the nasal extremity of the frontal ends with a sharp process; between the two processes of the rostral extremity of the nasals, lateral and medial, there is a wide and shallow incision; the naso-incisive incision is reduced; the mastoid process is reduced; a reduced accessory lacrimal foramen is present; between the maxillary and sphenopalatine foramen, an obvious vascular foramen can be observed; medio-aboral, on the edge of the jugular foramen is the hypoglossal canal; the pharyngeal tubercle is reduced and limited on the sides by two reduced fossae; the external occipital crest is well highlighted; above the ventral condyloid fossae are the deep and elongated dorsal condyloid fossae; the mental foramen is accompanied by an accessory mental foramen.

Key words: *irbis, skull morphology, snow leopard.*

SPATIO-TEMPORAL VARIATIONS OF LENGTH, TOTAL WEIGHT AND BODY CONDITION INDEX OF THE MEDITERRANEAN HORSE MACKEREL FROM THE ROMANIAN BLACK SEA AREA

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Abstract

The purpose of this study was the analysis of spatio-temporal variations of length, total mass and the Fulton condition factor (useful index for monitoring feeding intensity) as well as of the length-total mass relationship, which is an important parameter, which helps to know the growth pattern of fish populations. A number of 1200 individuals from the Trachurus mediterraneus species (Steindachner, 1868) that were collected from pelagic trawls and stationary uncovered pound nets along the Black Sea coastal area in the periods 2013-2015 and 2018-2020 were analysed. The average lengths and weights were 11.4 ± 2.3 cm and 14.0 ± 8.3 g, respectively, and the minimum and maximum values were 3.0 and 19.0 cm in length and 0.6 and 61.2 g in weight. The value of exponent b in the equation is 2.9485, indicating that the weight increase is allometrically positive. The mean value of the Fulton was 0.84 ± 0.11, and the minimum and maximum values were 0.42 and 1.74. The average length and average weight were significantly correlated with the Fulton index ($r = -0.069$; $p = 0.017$, respectively $r = 0.168$; $p < 0.0001$). The total length and the Fulton index of horse mackerel varied significantly between stations and between years and months, which is most likely due to seasonal variations, as well as trophic differences between areas.

Key words*: biometric measurements, Fulton index, length-weight relationship, statistical analyses.*

THE EVOLUTION OF THE CONSERVATION STATUS OF THE COMMUNITY INTEREST SPECIES, *Barbus meridionalis*, AT THE LEVEL OF DOMOGLED - CERNA VALLEY NATIONAL PARK

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Abstract

Humanity's advances in the field of technology in recent decades have induced and continue to induce a permanent anthropogenic pressure, with a tendency to escalate on the abiotic and biotic environment. In this context, the scientific questioning of the two environments, abiotic and biotic, is required, in order to develop specific strategies for the conservation of biodiversity. The scientific inquiries carried out within the Natura 2000 Site ROSCI0045 Coridorul Jiului highlighted that the species of community interest Rhodeus sericeus amarus is in a favorable state of conservation, but the anthropogenic pressures identified, of high intensity, such as K03.04 - Predation, F02.01. Passive professional fishing, C.01.01. The extraction of sand and gravel, J. Changes in the natural system and M. Climate changes, have visible negative effects on the size of the species population in the natural protected area and on the quality of the specific habitats.

Key words*: evolution, milk production, NW Region, Romania, trends.*

THE USE OF STURGEON CULTURE TECHNOLOGIES FOR IRRIGATION CANAL EXPLOITATION

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Abstract

In the context of global climate change, which influences the availability of water resources for use in aquaculture and agriculture, impacting food production and ensuring food security. For this reason, Romania also needs to identify and research new techniques for efficient water use in agriculture by integrating aquaculture into irrigation, thus exploiting aquaculture effluent for irrigation. The study aimed to evaluate the use of sturgeon culture technologies for irrigation canal exploitation. A number of 165 specimens of the species Acipenser gueldenstaedtii (Brandt & Ratzenburg, 1833), with an average mass of 1000 g/fish, were reared in a 5 x 5 x 3 m cage made of galvanized panels and located in the CM Lunca irrigation canal. At the end of the experimental period, after 45 days, the results obtained showed an individual growth gain of 800 g and an adequate health status due to the adaptability of this species to sturgeon rearing conditions in cages located in irrigation canals, which proved to be an efficient exploitation of the water body - the irrigation canal.

Key words*: cage, irrigation canal, Sturgeon.*

PROXIMATE COMPOSITION CHANGES OF PONTIC SHAD MEAT (*Alosa immaculata*, Bennet) DURING SPAWNING MIGRATION

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Abstract

The Pontic shad (Alosa immaculata Bennet, 1835) is well-known for its rich nutritional profile, particularly its high-quality meat content. This fish species is valued for its significant contribution to a healthy diet due to its nutrient-rich and delicious meat. To reach the spawning grounds, Alosa immaculata migrates over a distance of several hundred km. During migration, the shad does not feed, resulting in a substantial loss of body reserves. In this context, the analysis of protein, lipid, and mineral composition of fish meat is essential to verify its compliance with food regulations and commercial standards. Therefore, the current study investigated the biochemical composition of the Pontic shad Samples were collected from the Danube River (Km 169 - Km 197), in Romania between March and May 2023. The results of our study reveal a significant reduction ($p < 0.05$) in lipid and protein content, coupled with a significant increase in water content, during the fish`s migration, highlighting the impact of this vital biological process on its biochemical composition.

Key words*: ash, lipid, Pontic shad, protein, water.*

EFFECT OF WET-AGING WITH VITAMIN C ON QUALITY BIOMARKERS OF *Biceps femoris* MUSCLES COLLECTED FROM SUSTAINABLE MANAGEMENT OF *Cervus elaphus* L. POPULATION FROM NORTHERN EASTERN CARPATHIANS, ROMANIA

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Abstract

*This work aims to investigate Wet-Aging with Vitamin C on chemical properties of Biceps femoris muscles collected from sustainable management of Cervus elaphus L. population from Northern Eastern Carpathians, Romania. 2% Alkaline Vitamin C Powder per 0.520 kg muscle sample, 4% Alkaline Vitamin C Powder per 0.504 sample kg, and 6% Alkaline Vitamin C Powder per 0.496 kg sample were used. Samples were protected from light and kept at 2°C for 10 days in order not to accelerate oxidative stress of the muscle samples. The influence of Vitamin C used in the Wet-Aging method was tested by performing chemical analyses. Data distribution was evaluated using SPSS Statistics 26.0 software. Non-parametric Independent Samples Kruskal-Wallis test was performed to analyze how the percentage of protein, water, collagen, and fat varied with the concentration of Vitamin C in muscle samples. The results suggest that there are significant differences for quality biomarkers (***$p < 0.001$) in the percentage of fat, in particular, between the percentages of Vitamin C introduced. Bonferroni correction was applied to counteract errors for multiple assays and to reduce the chance of an erroneous conclusion.*

Key words*: chemical properties, vitamin C, game meat, quality component, wet-aging.*

ASSESSMENT OF THE ANTIOXIDANT POTENTIAL OF BLACKTHORNS AND HAWTHORNS: PROSPECTIVE IMPLICATIONS FOR RUMINANTS' NUTRITION

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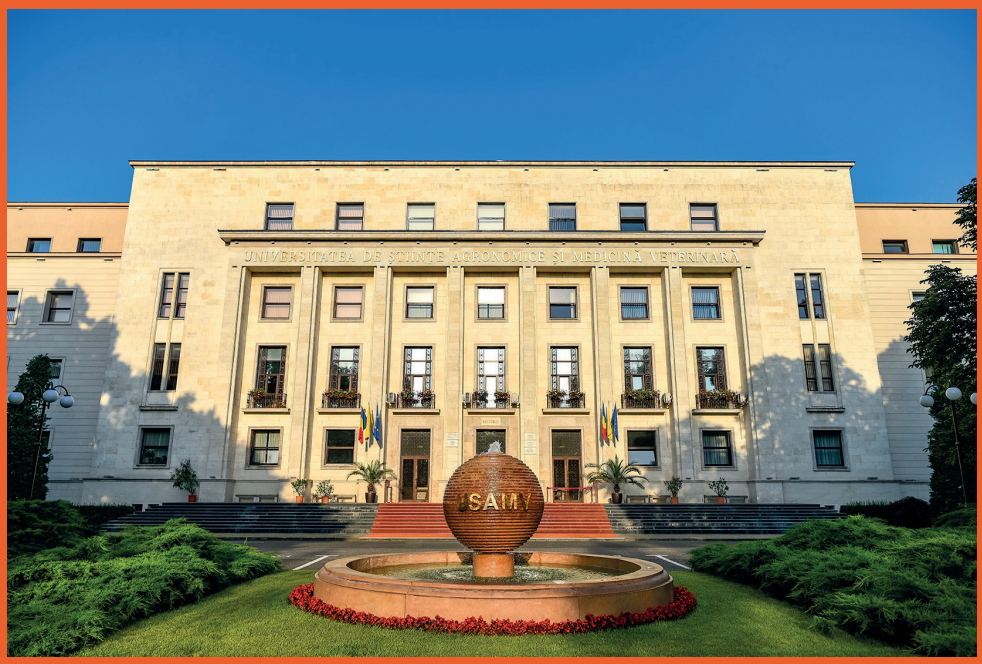
Abstract

Considering the growing interest in adopting a healthier lifestyle, the food industry is intensifying its effort to enrich food composition in several nutrients through animal feeding systems, but these challenges can be limited by the costly feed resources, making it crucial to explore alternative feedstuffs. Blackthorns and hawthorns are rich in phytochemical and antioxidants, suggesting their potential to enhance the performance of ruminants. Our study revealed their rich composition of nutrients; hawthorns showed a remarkable amount of polyunsaturated fatty acids (57.23 g FAME/100g), particularly Ω3 and Ω6 fatty acids, while blackthorn presented higher concentration of monounsaturated fatty acids, specifically oleic acid (56.99 g FAME/100g). In terms of liposoluble antioxidant compounds, blackthorn had higher levels of carotenoids and vitamin E (123.83 mg/kg), including its isomers. Concerning the water-soluble antioxidants, hawthorns showed elevated composition of the total content of flavonoids and polyphenols and it exhibited a remarkable antioxidant capacity, as assessed through DPPH, ABTS, and TAC analyses. [EP1] [AO2].

Key words*: antioxidant capacity, bioactive compounds, blackthorn, hawthorns, ruminants.*



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