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Foreword

Romania's accession to the European Union claims significant changes in all sectors of the national economy, in animal husbandry implicitly, transformations that have to generate a sustainable development directed both to the national and to the European and world priorities.

The major objective of Romania in this area is to close as much as possible the gap existing between the performance of the domestic animal production and that of the member states. Scientific research is a strategic requirement for the improvement of the current state of the Romanian animal production; it has to contribute to food quality and safety by efficient and realistic solutions for the development of animal production. Within this context, the Romanian animal husbandry is called to add to the implementation of the national strategy of animal production development, to the production of raw materials for domestic use and, if possible, for export.

Romania's accession to the European Union will induce the reorganisation of the current system and will be a new opportunity to set effective priorities in research, inclusive for its financing. The accession will facilitate the generation of an active and dynamic understanding of the need for change, as well as of a new, more flexible, management of research, directed towards the customer, constructive and focused on performance. Such an opportunity must not be missed.

As component part of the national system of scientific research the general objective of the institute is to support the Romanian animal husbandry to approach the problems resulting from the coming accession to the European structures. Within this context the mission of the National Research-Development Institute for Animal Biology and Nutrition (IBNA) is to have a fundamental contribution to the development of scientific creation, to the integration within the European structures. This mission is both scientific and cultural. It has to be achieved by opening towards everything that is new in science, by assuming bold directions of research, by drawing the youth towards performing scientific models, by forming and stimulating the critical thinking and by promoting an independent and creative style of intellectual work. Professionalism is the cardinal value in this mission. This value must be defining for the research activity. IBNA undertakes to form true professionals in the fields of activity of its researchers considering that this is the only way to play the role it has now and in the future. A way of reaching these targets is the annual organisation and hosting of an international symposium of animal biology and nutrition whose scientific quality must increase year by year, aspect that is indispensable for integration within the European Research Area.

General manager,
Prof. dr. eng. Horia Grosu

Session 1 – oral presentations

Development strategy of the National Research-Development Institute for Animal Biology and Nutrition within the frame of EU integration

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ABSTRACT

The strategy of the institute expresses our overall major targets projected on long periods, corroborated with the available resources, with the ways and deadlines to reach those targets, so that the mission of the institute materialises under competitive economic terms.

The development of the presented strategy involves three stages: knowledge of the current status; the prospective objectives; the ways of achieving the objectives.

Starting from the current situation of the Romanian animal husbandry we established the general objectives of this sector and, correlated with them, the research directions and the specific objectives of I.N.C.B.N.A.- Balotesti.

The paper presents the research directions over the next 5 years, agreed within the MAKIS Project (Modernising Agricultural Knowledge and Information Systems), implemented by the World Bank and the Ministry of Agriculture, Forestry and Rural Development. Other research directions are specified in addition to these, which to cover the non-nutrition area (molecular genetics, preservation of the biodiversity, etc.). Of particular concern is the inter-institutional collaboration between I.N.C.B.N.A. and other national and international institutions.

The achievement of the proposed objectives implies the use of human, material and financial resources, as outlined in the last part of the paper.

The end purpose of utilising the scientific results must be the transfer of the scientific knowledge acquired during the experiments to the main beneficiaries: farmers, processors, universities, etc. Essentially, all this process may be regarded as the final steps of a “client-driven research”. All this matches the overall process of European integration.

The intestinal microflora of piglets around weaning - with emphasis on lactobacilli

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ABSTRACT

This study was aimed at describing the dynamics of microflora colonizing different parts of gastrointestinal tract of piglets around weaning transition with emphasis on ileal lactobacilli, as they are known for their health promoting properties. Eight piglets were slaughtered at day of weaning and four on 1st, 2nd, 5th and 11th day post weaning (pw), respectively. Digesta samples were taken from ileum (1/3 of distal small intestine), caecum and colon (40-50 cm of proximal colon) for microbial examination using selective growth media. Results revealed dramatic and time dependent changes with all observed groups and more pronounced effects in ileum than in caecum or colon. *Enterobacteriaceae* count was in a steady state from day of weaning until 5th day pw whereas significantly lower counts were found on 11th day pw. *Enterococci* also showed no differences during first two days but dramatically decreased levels were observed on 5th and 11th day pw. Yeasts counts decreased 5 days pw but recovered until 11th day whereas number of lactobacilli decreased ($p < 0.01$) on 1st day and recovered within 5 days to initial level.

A total amount of 72 lactobacilli colonies was picked up from counting plates, purified and identified by means of their carbohydrate fermentation ability. Results highlight *L. acidophilus* (44.4 %) followed by *L. fermentum* (35.7 %) and *L. salivarius* (15.3 %) being predominant species. Additionally, there was a time dependent shift with *L. salivarius*, *L. fermentum* and *L. acidophilus* being most abundant species before weaning whereas predominance of *L. fermentum* and *L. salivarius* on 1st, 2nd and 5th day pw and *L. acidophilus* on 11th day pw was observed. Our results provide a general overview of occurring changes with major groups of intestinal microbial community in weaning piglets. This could be helpful in current research for alternatives for in-feed-antibiotics. As demonstrated with lactobacilli, changes may also occur within these microbial groups. Further research is needed to elucidate impact of intestinal microbial population dynamic on piglet health status during weaning transition.

Keywords: intestinal microflora, weaning piglets, lactobacilli, *Enterobacteriaceae*, *Enterococci*, yeasts, gastrointestinal tract, API

Study of zearalenone contaminated feedstuffs on the detoxification enzymes

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ABSTRACT

Zearalenone (ZEA), a *Fusarium* toxin, is frequently found in animal feed materials. It is a naturally occurring estrogenic contaminant of mouldy feeds and is present in high concentrations in dairy products and cereals. Its mechanisms of toxicity involve the binding of both zearalenone and its metabolites on steroid receptors. A general detoxification process, leading to reduction of bioaccumulation of the potentially toxic substances in animal organism, is based on the bio-transformation reactions of xenobiotics catalyzed by Cytochromes P450 (CYP). CYPs are part of an enzymatic multigenetic superclass, involved in the oxidative metabolism of a great variety of molecules, such as xenobiotics (drugs, pesticides, toxins, carcinogens) and also endogenous substances (steroid hormones, fatty acids, vitamins). Our studies concern the elucidation of the effects of contaminated aliments (especially those containing Zearalenone) on the enzymes of detoxification (Cyt P450) within animal liver, particularly those involved in steroid metabolism. Another point of interest is the metabolic studies concerning the effects of zearalenone purity, alone or in natural mixtures, on CYPs expression and its animal or human pharmacokinetics. The metabolic effect of Zearalenone on the CYPs is not very well known and the previous experiments were limited to in vitro exposure. Our preliminary data are in favour of a liver CYP 1A induction upon rat i.p. treatments.

Keywords: mycotoxins, zearalenone, detoxification, rats

In vitro effect of deoxynivalenol on porcine lymphocyte immune functions

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ABSTRACT

Deoxynivalenol (DON) is a trichothecene produced by species of *Fusarium* genus that can contaminate the raw materials used in farm animals feeding. Pigs are exposed to contamination with DON due to their diets rich in cereal grains and they are much more sensitive than poultry or ruminants to the action of this toxin. The present study

investigated the effects of DON on the immune system of the pigs focusing on cell proliferation. First we evaluated the effects of DON on cell proliferation by analyzing the incorporation of tritiated thymidine. Our results showed that low doses of DON (1-10² ng/ml) had a stimulating effect on lymphocyte proliferation in the peripheral blood of the pigs while the high concentrations (10⁴-10⁵) of DON strongly inhibited lymphocyte proliferation. Further we investigated the cytotoxic effects of the mycotoxin studying its effects on cell viability (MTT test) and on apoptosis (double staining with annexin and propidium iodide). The low levels of DON (0.01-1µM) determined a slight increase of cell viability. Starting with 10µM cell viability decreases and this effect becomes stronger at very high concentrations (100 and 1000µM). At 1µM DON seems to inhibit cell metabolism without starting apoptotic processes, however. At very high concentrations (10 and 100µM) DON is responsible for a dramatic increase of cell apoptosis. These results may have important implications for the increased sensitivity to infections of the animals intoxicated with DON.

Effects of dietary mint on some egg traits and egg cholesterol content of laying hen

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ABSTRACT

This experiment was carried out to determine the effects of supplementation of mint in laying hen diets on some egg traits and egg cholesterol content. A total of 180 IGH type brown laying hens aged 42 weeks were employed in a completely randomized block design with one control group and three treatment groups. Each group was divided into five replicates as subgroups, each comprising 9 hens. The diets of the first, second and third treatment groups were supplemented with 0.5, 1.0 and 1.5 % of mint, respectively. The experimental period lasted 20 weeks. Food and water were provided for ad libitum consumption and the diets were presented in mash form. Eggs were weighed two times a week individually. Fifteen eggs from each group (3 eggs from each replicate) were collected at five week intervals to determine the egg traits. Individual eggs were weighed and their shape index, egg shell breaking strength and shell thickness were measured. Then yolk height, albumen height, yolk width, albumen width and albumen length were determined. By using these values, yolk index, albumen index and Haugh unit were calculated. Egg internal quality and shell quality analyses were completed within 24 hours of the eggs being collected. At the end of the experiment 6 eggs per each replicate group were randomly chosen to determine yolk cholesterol. The

percentage values of shell weight, yolk weight and albumen weight were also calculated. Dietary treatments did not significantly affect egg weight, egg shape index, egg breaking strength, egg shell thickness, egg albumen index, egg yolk index, egg Haugh unit and the percentages of egg shell, albumen and yolk. Diets containing 1.0 and 1.5 % of mint reduced egg yolk cholesterol as mg per g yolk ($p<0.01$) and mg per yolk ($p<0.05$) compared to the diet of control group. The results in this study demonstrated that mint supplementation at the level of 1.0 and 1.5 % reduced egg cholesterol without adverse effects on egg traits of laying hens.

Keywords: Egg cholesterol content, egg quality, mint, laying hen

Comparative study on the effects of high plant oil diets on layer performance. I. Bioproductive performance and organoleptic characteristics of the eggs

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ABSTRACT

The paper presents the results obtained during the first part of a study on the comparative evaluation of the effect of the dietary plant oils (soy, palm, buckthorn and corn germs) given to layers on the bioproductive effects and egg characteristics. The trial involved 64 Lohmann Brown layers during the age period 23-27 weeks (1 week of accommodation and 4 experimental weeks). The layers, assigned to 4 groups (16 layers/group, 4 layers/cage) received diets based on corn, wheat, soybean meal and plant oil (6%). The diets differed by the dietary oil: soybean oil for the control group C; palm oil for E1, buckthorn oil for E2 and corn germs for E3. The diets for groups C, E2 and E3 were supplemented with 250 ppm. No supplemental vitamin E was necessary for E1 because the palm oil already had 300 ppm vitamin E. The results showed that yolk colour intensity was significantly ($p<0.01$) stronger in E2 (12.5 ± 0.52) than in the other groups (2.83 ± 1.03 for C; 2.42 ± 0.51 for E1 and 2.33 ± 0.065 for E3), fact which made the consumer evaluate higher all the organoleptic parameters for the eggs from this group. In E1 (48 mg vit E/ kg compound feed, CF) the yolk level of vitamin E was significantly ($p<0.05$) lower than in the other 3 groups (280 vit E/ kg CF); a strong correlation was observed between the level of vitamin E from the diets and from the eggs ($R^2=0.983$).

Keywords: egg, quality, oil, soybean. Palm, buckthorn, corn germs

Herbs and organic acids as an alternative for antibiotic-growth-promoters

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ABSTRACT

Agriculture products used as raw material for animal feed production often cause food contamination with pathogenic bacteria which, in turn, adversely affect growth and productivity of animals. With the complete ban of the use of antibiotics in animal feed as of January 1, 2006, there is a growing concern that susceptibility of animals to diseases communicable to humans shall be increased.

Before introduction of antibiotics ban, thorough researches were carried out and a number of alternative strategies have been developed to cope with the removal of antibiotic growth promoters, including: organic acids and their salts, probiotics, prebiotics, enzymes, biogene additives (essential oils, herbal extracts etc.)

The objective of this paper was to examine minimum inhibitory concentration (MIC) of the new product „Multiacid“ and essential oils blend needed to inhibit pathogen bacteria growth, in particular *Salmonella*, as compared with several commercial acidifiers. Based on the results of measured antimicrobial activity, optimum dosages of acidifier have been determined as recommendation for their supplementation in animal feed, namely, 1,25 kg/t acid and 35g/t pure essential oil.

pH value of the blend of the new product and essential oils was 3,14, to be further reduced following the supplementation of 1,5kg/t pH for 0,5. Preliminary results indicate that this product may be recommended as a replacement for antibiotic growth promoters.

Key words: antibiotic replacement, acidifiers, essential oils, *Salmonella*

The effects of dietary supplementation of brewers yeast on the performance, egg traits and blood parameters in laying quails

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ABSTRACT

This experiment was carried out to determine the effects of the usage of brewers yeast in quail diets on laying performance, egg traits and blood parameters. A total of 240 Japanese quails aged 10 weeks were employed in a completely randomized block design with one control group and three treatment groups. Each group was divided into five replicates as subgroups, comprising of 12 quails each. The diets of the first, second and third treatment groups were supplemented with dried brewers yeast at the level of 1.5, 3.0 and 4.5 %, respectively. Soybean meal was replaced with dried brewers yeast. The diets were formulated to be isocaloric and isonitrogenous. The experimental period lasted 18 weeks. Dietary treatments did not significantly affect body weight, daily feed intake, egg production, egg weight, feed efficiency, mortality, egg shell thickness, egg albumen index, egg yolk index and egg Haugh unit. Blood serum cholesterol of groups fed diets with brewers yeast was significantly lower than that of the control group. Feeding 3.0 and 4.5 % brewers yeast resulted in significant increases in blood serum levels of total protein, alanine aminotransferase at the end of the experiment. Blood serum levels of uric acid, triglyceride, aspartate aminotransferase and alkaline phosphatase were not affected by dietary brewers yeast. It is concluded that brewers yeast can be used up to 4.5% in the diets of laying quails without adverse effects on the measured parameters.

Keywords: Brewers Yeast, Laying Quail, Performance, Egg Traits, Blood Parameters

Session 2 oral – presentations

Investigations on the taxonomy of the local Romanian breeds, their zoological and cultural importance and their preservation

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ABSTRACT

The breeds of domesticated animals are a basic factor of animal production. In addition, they may also have a given cultural-historical significance. Their description holds, therefore, a considerable amount of space in animal science literature and research; taxonomy, however, the identification, description, systematisation, nomenclature and classification of the breeds, which is actually missing among the animal sciences, is in a paradigm crisis. Linnee tried to make order in the taxonomy of

animal husbandry too by introducing the triple denomination in sheep, but although he did not succeed, animal husbandry taxonomy remained at the typological, Linnaean paradigm, while the taxonomy exceeded the Darwinian paradigm and reached a biological one. Frequently, due to subjective or random reasons the same breed is given different names or different breeds are given the same name. The breed called Wallachian by Bufon and Darwin is named either Racka, which means Serbian, or Cork Screw Horn Wallachian by the Serbs, or Zacke, the German for the Linnaean name. The Tsurcana sheep are called either Romanian Zackel, or Wallachian, or Gyimes Racka, or Transylvanian Zackel. Tsiagi sheep hide three breeds: Tsigai, Black head Ruda from the Serbian-Croatian border, the buckled Ruda from the Serbian-Romanian border. Animal husbandry taxonomy must appear as science connected to the zoological taxonomy but independent from it. Its components, microtaxonomy and macrotaxonomy, must modernize and standardise their methods. Special attention must be given to the cultural-historical aspects, in fact a problem of the zootechnical systematic. The local Romanian breeds, the sheep breeds particularly, are spread over wide areas in Central and South-Eastern Europe. They are true milestones in the history of the Romanian people. The local subpopulations of some breeds, such as the Tsurcana sheep, may further show the former existence of some rather different ethnic groups. The sustainable development of humanity presumes the maximal saving and preservation of earth resources, including the local breeds that are also protected by the fact that they are better adapted to the ecological niches of the country. Of the 34 breeds extinct in Romania over the past century, 21 were imported breeds.

Effect of feed supplementation with *Chlorella vulgaris* powder on mice reproduction

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ABSTRACT

The effect of feed supplementation with 1.0 % spray-dried green alga (*Chlorella vulgaris*) powder on mice reproduction was investigated. The study was continued in three generations of mice, strain Fzt:DU. Females from F0 were fed respective diet (commercial chows in control and supplemented chows in algae group) starting from 21st day of life (weaning). They were mated randomly on the 63rd day of life and all gave birth to pups. Litters were weighed, counted and then standardized (4 males and 5 females per litter). Pups were weighed and counted on day 10 and 21. After the weaning, 2 females and 2 males (F1) from each litter were kept further. Females were mated on 63rd day of life. On the 18th day of pregnancy 57 and 59 (control and algae group) were sacrificed, 51 and 53 (respectively) gave birth to pups. Live, dead, absorbed fetuses and corpora lutei were counted, live fetuses were weighed. Born

pups were counted and weighed and kept by dams without standardization, their number and weight were recorded on days 10 and 21. 2 females and 2 males (F2) were weaned and kept further, the procedure as above was repeated. No difference in number of foetuses, corpora lutei or born pups was noted between groups nor between generations. Litters from algae group were slightly heavier at the weaning, the females and males from algae group also developed slightly better than the ones from control group, this tendency was seen in all generations.

Keywords: *Chlorella vulgaris*, green alga, mouse/reproduction

The effects of carnitine supplementation on catch-up growth and serum leptin concentration in rats with malnutrition models

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ABSTRACT

The effects of carnitine supplementation in catch-up period of malnourished children could not be defined clearly due to the presence of limited cases with protein and calorie malnutrition. Pathological dysregulation of leptin has been reported during the catch-up period of growth in children born with intrauterine growth retardation. Also, it has been shown that carnitine supplementation partially reduced leptin resistance in old rats. The purpose of this study was to determine the effect of carnitine supplementation on growth rate and serum leptin concentration in young rats with protein or energy malnutrition. Sprague-Dawley rats aged 6 week-old were randomly assigned to three weight-matched groups, each consisting of 12 male and 12 female rats. The first, the second and the third groups were given a basic diet (control group), protein-restricted diet and energy-restricted diet for four weeks, respectively. At the end of fourth week of experiment, each group was randomly subdivided into carnitine supplemented (500 mg/kg/day L-carnitine with orogastric tubes) and nonsupplemented groups and, all rats were given free access to the basic diet for the following four weeks. Body weight and food intake were measured weekly throughout the experiment. Blood was drawn at the beginning, at the end of 4th and 8th weeks of the experiment. Serum leptin levels correlated with the weight of the rats at the beginning of the experiment. After development of the malnutrition models, no correlation was found between serum leptin levels and weight of the rats in both the protein and the energy malnourished rats. Serum leptin levels in malnourished rats were found to be significantly lower than those in the control group. Upon recovery of malnutrition, the rise in serum leptin levels did not correlate with the weight gain in the malnourished rats. Following achievement of catch-up growth, serum leptin levels rised to control values and no differences were detected in serum leptin levels among groups. At that time, a significant correlation

between the weight and serum leptin levels was reappeared in the protein malnourished rats. Rats with carnitine supplementation had slightly higher weight gain than rats without carnitine supplementation in the protein malnutrition group. Carnitine supplementation did not affect serum leptin levels. If the results of this study on rats with malnutrition models can be translated into malnourished children, carnitine supplementation may be recommended in children with kwashiorkor, but carnitine supplementation in children with marasmus might be ineffective for catch-up period. Serum leptin levels had no value to follow malnourished rats during catch up period.

Key words: leptin, carnitine supplementation, rat, malnutrition, catch-up growth

Protection from acetaminophen-induced liver damage by the synergistic action of sodium selenite and n-acetylcysteine in mouse

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ABSTRACT

Acetaminophen (AAP) is a commonly used analgesic and antipyretic drug; however, when used in high doses, it causes fulminant hepatic necrosis in both humans and experimental animals. In this study, we investigated if selenium and N-acetylcysteine (NAC), alone or in combination are protective against AAP toxicity in mice. 150 Male Swiss albino mice weighing 30 ± 2 g were used in the experiment. They were housed under conventional laboratory conditions. The mice were fed a standard pellet diet and allowed free access to food and water. At the beginning of the experiment, blood samples were taken from 10 mice as a control value. Then, the remaining mice were randomly allocated into 4 groups, each consisting of 35 animals. The first group received a single administration of AAP by gavage at a dose of 600 mg/kg-body weight, po. The second group was treated with sodium selenite (0.5 μ g/g-body weight, po) one hour after ingestion of AAP (600 mg/kg-body weight). The third group ingested AAP (600 mg/kg-body weight, po), followed 1.5 hr later by NAC (500 mg/kg-body weight, po). The fourth group was received sodium selenite (0.5 μ g/ g-body weight, po) and NAC at a dose of 500 mg/kg-body weight, po, one and 1,5 hour after administration of AAP (600 mg/kg-body weight, po), respectively. Blood samples were taken from 7 mice of each group at 4, 8, 24, and 48 h after AAP toxicity. Each mouse bled only one time during the experiment. Serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), lactic dehydrogenase (LDH) levels were measured. AAP caused significant liver injury in mice at 4 h after dosing, as indicated by the substantial

increase in serum ALT, AST and LDH levels. In AAP toxicity group mice serum ALT was 1793 U/L at 4 h, 3147 U/L at 8 h, 728 U/L at 24 h, and 134 U/L at 48 h. Serum ALT, AST and LDH levels increased by 4 h, reached a peak level by 8 h, and then decreased at 24 h in AAP-toxicity group; however, interestingly, serum ALT, AST and LDH levels increased rapidly in AAP-Se group at the 4th h, then decreased rapidly. Compared to AAP-toxicity group, the levels of serum ALT were lower after AAP ingestion in NAC-treated mice at the 8th h. NAC+Se treated group had slightly lower serum levels of ALT, AST and LDH by 4 h compared to other groups, however NAC and Se treatment, alone or in combination significantly restored serum ALT level at the 8th h of toxicity. As a result, treatment with NAC and Se exhibited a synergistic effect in AAP-induced liver damage.

Key words: Acetaminophen, hepatotoxicity, N-acetylcysteine, sodium selenite, mice

Database for evaluating the nutritive value of forages and of the animal food for human consumption with the view to determine the potential of lipid improvement

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ABSTRACT

The development of a logistic support which to allow the researchers investigating the food flow forages-primary consumers (animals)-main consumers (humans) and the easy access of users to information required the establishment of a database. This database shows particularly the influence of the dietary lipid structure on the animal food and its impact on the health state of humans with risk factors for nutrition and metabolism diseases. The database is structured for each link of the food chain as follows: forages used as primary source of food by the farm animals, plant products and animal products used as food by human consumers. The data will be used in future research as analysis and comparison elements for the development of software which to record and monitor lipid disorders in patients receiving animal food with normal lipid composition.

Keywords: database, forages-animals-humans, lipid improvement, meat quality

New technologies and quality of trout and carp aquafeed

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ABSTRACT

Objective of our researches was to examine efficiency of installed extruder and vacuum coater, and benefits of applied technology in trout and carp feed, and to determine physico-chemical composition and nutritional value of this feed in comparison to fish feed made by renowned world producers. The quality fish feed production is a complex technological procedure that requires great knowledge but also an adequate equipment. A satisfactory preparation of raw material, extrusion, as well as, the use of the vacuum coater, are certainly necessary segments in the technological lines for the feed production for such kind of an animal. Obtained production results indicate that feed manufactured in our facility generates same results as the feed of three renowned world feed producers. The results obtained at the end of trial show that floating pellets for carp, particularly in group 1, had somewhat increased performance benefits (growth rate and FCR) as compared to sinking pellets.

Key words: aquatic feed, extrusion, vacuum coating, nutritive value, trout, carp

Preliminary investigations on the use of ICAR standardised methods to check the milk yield in sheep

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ABSTRACT

The purpose of the paper is to test the standardised methods to check the milk yield in the local sheep breeds and to select the most efficient methods and use them to select sheep for milk production in Romania. The paper presents the results obtained with the standardised ICAR (International Committee for Animal Recording) methods A/B4; A/B5; A/B6 compared to the Romanian method of the “Checking coefficient” developed by Th. Nica and B. Dermengi. A future paper will present the results of applying the other ICAR methods (AT and AC) as well as the final conclusions.

Keywords: sheep, check milk yield, ICAR

Effects of egg storage period on egg quality, hatchability, duckling quality and relative growth

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ABSTRACT

A total of 864 incubating eggs produced by Pekin duck breeder flock (Star 52-Grimaud Freres) were used to determine the effects of storage period (0, 3, 7, 11 d) on egg quality, hatchability, embryonic dead, duckling weight, duckling quality and relative growth at the end of 7 d rearing. There were no significant differences in initial egg weight of the groups. Egg albumen index, Haugh unit, albumen pH and yolk pH were affected significantly by the length of egg storage period. Albumen index was 10.31 from fresh duck eggs and reduced to 6.63 from eggs stored for 11 d. Haugh unit was 82.1 in fresh duck eggs and reduced to 66.6 from eggs stored for 11 d. Albumen pH was determined 8.69 and 8.83 in duck eggs of stored 0 and 3 d, respectively. This was raised to 9.02 with the increased storage period. Hatchability from eggs stored for 11 d was significantly lower than the other groups as a result of the lower quality of the albumen and also increased embryonic dead. Middle and late embryonic mortality were not affected significantly from storage period. Egg weight loss after the storage period was the highest in eggs stored for 11 d. However egg weight losses in groups until 25 d were not affected by the length of egg storage period. The ratio of egg weight to duckling weight was found to be 57.3%, 58.2%, 58.3% and 58.2% in the eggs of stored at 11 d, 7d, 3 d and 0 d, respectively. Quality of the ducklings, body weight at 7 d of age and relative growth from eggs stored for 11 d were lower ($P<0.001$) than the other groups. The percentage of day old ducklings of quality score of 100 was higher in eggs stored for 0 and 3 d. Among the four storage groups, the relative growth of ducklings with scores of 100 was higher ($P<0.001$) in eggs stored for 0 and 3 d, whereas there was no difference in the relative growth of ducklings with quality scores of less than 100. Although the number of the death in ducklings from eggs stored of 11 d was slightly higher than those from stored 7, 3 and 0 d, the difference was not significant. As a result egg albumen index, Haugh unit, hatchability, duckling quality and 7 d weight of ducklings were decreased; increasing the storage period increased egg albumen pH and yolk pH. Weight of ducklings at 7 d and relative growth were higher in eggs stored for 0 and 3 d than in eggs stored for 7 d. However hatchability, early dead and duckling quality were not significantly different among eggs stored for 0, 3 and 7 d. It is recommended that the storage period should be no longer than 7 d for duck eggs.

Keywords: Duck egg, storage period, egg quality, hatchability, relative growth.

Poster session

Dietary antioxidant effect of vitamin E on different swine tissues

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ABSTRACT

Different types of tissues from swine fed with three contents of α tocopherol were analyzed in order to assess the anti-oxidant effect of the naturally occurring vitamin. In the work described, we evaluated the effects vitamin E supplementation administrated as α -tocopherol acetate in the following concentrations: 11 (C = control), 100 (E1), 300 (E2) mg/kg of diet and compared the findings with those of the basal diet group. The treatments affected the lipid stability of fresh muscle and different organs tissues during aerobic storage at refrigeration temperatures, supplementation reduced ($P < 0.01$) lipid oxidation in E2 group compared with basal group (C), in accordance with the α -tocopherol contents of the diet.

Key words: vitamin E, antioxidants, lipid oxidation, swine

Evaluation of an amylolytical enzymatic product given to piglets during the weaning crisis

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ABSTRACT

The purpose of the experiment was to test an enzymatic preparation given to growing pigs and to determine the optimal dose of including it in the dietary compound feeds. The trial was conducted 54 Large White piglets. The use of the amylolytical preparation did not influence significantly the body weight and average daily gain of the piglets during the weaning crisis, possibly because the compound feed nutrients were optimal for this category of pigs. Feed conversion ratio improved by 1.52% and 4.04%, respectively in the treated groups compared to the control group. The results suggest the

efficiency of using enzymatic preparations in the formulations of compound feeds that are deficient in nutrients.

Keywords: nutrition, growing pigs, enzymatic preparation

Use of urea molasses feed blocks as supplementary feed in sheep feeding

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ABSTRACT

Sheep in Turkey are heavily dependent on pasture grazing with no supplement from spring to winter time. During summer animals are fed on poor quality dried pastures and in most cases their maintenance requirements are not met. On the other hand, hand feeding with chopped cereal straw or poor quality roughages with some barley is common feeding practise in winter. This type of feeding system is likely to result in lower digestibility of nutrients and as well as deficiency of those, especially during summer and winter. With existing sheep feeding system, strategic supplementation is the most appropriate way to improve sheep productivity. Urea molasses feed blocks (UMFB) provide nutrients to the rumen microbes and to animal in small amounts throughout the day. The blocks can be a source of rumen by-pass protein, macro and micro minerals, vitamins and additives to manipulate rumen fermentation besides providing non-protein nitrogen. The purpose of this work was to study the performance of sheep and their lambs after one and half month from the birth fed poor quality chopped creal straw with or without urea molasses feed blocks during hand feeding in winter. Fifty mature Akkaraman sheep with their lambs were divided in ten groups of five and randomly allocated to a control or UMFB treatment. All animals were offered daily 1600 g cracked barley per head and mixture of chopped oat straw and grass hay *ad libitum*. The UMFB was composed of urea 5%, salt 4.5 %, sulphur 0.5%, cement 10%, calium oxide 5%, molasses 40%, wheat bran 28%, sunflower seed cake 7%. After 70 days of trail, the consumption of block was 207 g/head/day. The intake of straw and weight gain were not statistically different for the two groups of sheep but weight gain of lambs from UMFB group was found significantly higher then other group of lambs.

Keywords: sheep, diets, supplementation, molasses

Investigations on the influence of some premixes with different vitamin and mineral levels on growth and feed utilization in growing pigs

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ABSTRACT

Four premix formulations were developed and tested leaving from the variable requirements of vitamins and minerals of the growing pigs, according to the technical and sanitary conditions of rearing.

Premix P1+2 E4 (0.41% more vitamins and 6.67% more minerals than the control group) produced clearly higher gains and lower feed conversion ratios.

Data analysis showed that a higher concentration of minerals associated to low vitamin levels was not beneficial, while higher vitamin levels stimulate growth and improves feed conversion.

Keywords: compound feeds, vitamin-mineral premix, growing pigs, weight gain, feed conversion ratio, energy, protein

Probiotics in broiler nutrition and their effect on carcass quality– dressing percentage

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ABSTRACT

Priority in meat production is to ensure meat safety and hygienic production. Also, demands for quantity and high quality standards must be fulfilled. Nowadays, feed and food are treated on equal terms, and feed production is introduced to quality control systems. Permanent control of chicken meat quality, as an inevitable component of everyday diet, is necessary. The aim of this paper was to investigate pronutritive materials – probiotics and their effects on chicken meat quality and dressing percentage.

Key words: probiotics, broiler, meat quality, dressing percentage

Variability of the degradability of protein meals used within Romanian market: its influence on their nutritive value

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ABSTRACT

Although there are evidences that ruminal degradability of protein meals varies upon various factors such as their processing characteristics, the Romanian tables of nutritive values offers a single value for each of them. The article shows the ruminal degradability of several sources of soybean meals and sunflower meals within the Romanian market. The ruminal degradability of the studied feeds was measured using in situ method on ruminally fistulated non-lactating cows.

The assessment of the three main sources of mechanically extracted sunflower meal showed very high and similar degradability among them (86.3% - 88.6%). The situation was similar for the studied sources of soybean meal (75.7% - 79.5%). This high degradability shows these protein meals are generally not treated for lowering the ruminal degradability. Attempts to reduce the protein degradability were made by some soybean oil processing factories, using various methods. Of these, utilization of a glycosidic additive had no efficiency (only 0.5% reduction of degradability). On the other hand, the supplementary heat (from 1400C to 1600C) applied during the extraction process led to a reduction in degradability of 9%, which has biological significance for the efficiency of nitrogen utilization in rumen.

Keywords: ruminants, protein meals, ruminal degradability, nutritive value.

Use of feed additives as source of fat and fatty acids on cow milk production and quality

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ABSTRACT

The effect of using two feed additives as sources of fat and fatty acids on dairy cow performance was investigated on 12 animals assigned uniformly to 3 groups: control group, C (no additives), experimental group 1, E1 (additive 1) and experimental group 2, E2 (additive 2). The diets consisted of barley silage as bulk forage (free access) and complementary compound feeds (limited access) in which the feed additives were

incorporated (5%) for the experimental groups. The use of additives did not influence the intake of compound feeds or the total feed intake. Compared to the control group, milk yield increased slightly in E1 (+0.39 kg/day) and in E2 (+0.62 kg/day). Milk protein was similar in all three groups. Milk fat was higher in E1 (41.5 g/kg) and E2 (42.1 g/kg) compared to C (39.5 g/kg). Milk fat displayed a higher proportion of linolenic acid (C18:2) from 1.13% to 2.01%, which is beneficial to human health. A higher level of monounsaturated fatty acids and of long chain fatty acids was also observed to the detriment of short- and medium-chain saturated acids.

Keywords: feed additives, fat, fatty acids, cows, milk yield, milk composition

Contributions to the study of the leaf protein value in different mulberry varieties

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ABSTRACT

Mulberry leaf exclusively assures the growth and development of the silkworm larvae, being considered a complete value nutrient, so that the knowledge of its nutritional status is of great interest. The experiment was made in order to study the mulberry leaf protein value of the mulberry varieties: China 32, Eforie, Ichinose, Ucraina 107 and Kayrio Nezumigaeshi. The commercial silkworm hybrid “Triumf” was also utilized in experiment. The content of the protein substances in mulberry leaves, considered as the first step in the study of nutritive value, varied according to the mulberry variety and age of the leaves, being in average 7.93%. The total dry matter has increased together with the leaf age and was in average 30%, ranging from 28.08% to 31.53%. Concerning the protein content, the mulberry leaf reaffirms as a valuable nutrigenous source. The mulberry variety Ichinose showed the highest protein content (23.99%), followed by variety Kayrio Nezumigaeshi (23.53%). The total amino acids content in mulberry leaves changed in accordance with age of the leaves, providing the nourishing needs of the larvae. So, among of the four main amino acids: glycine, alanine, serine and tyrosine which form 90% of silk proteins, about 32% is glycine, 31% is alanine, 16% is serine and 11% is tyrosine. The most efficient mulberry varieties, estimated on the base of the quantitative and qualitative production, are Ichinose and Kayrio Nezumigaeshi.

Key words: mulberry leaf, protein value, dry matter, amino acids

Histological modifications at the duodenum level generated by utilisation of the medicinal herbs and essential oils in broilers' feeding

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ABSTRACT

Use of the medicinal herbs and extracts in the mono-gastric animals' nutrition is becoming a common practice because the phytoadditives could be looked upon as an alternative to antibiotics. In this regard an experiment was carried out at the Animal Nutrition and Feeding laboratory. This experiment was carried out on 120 broilers, divided into four experimental variants (LM, LEP, LEUP, and LU) of 30 broilers each, during 6 weeks, from hatching until 42 days of age. The hybrid used was Ross 308. In LEU group 250 mg essential oils of coriander, savory, and sea buckhorn per 1 kg of compound feed was incorporated. In LEP group an herb premix (peppermint, common sage, and garden balm) was incorporated 2% into the compound feed. In LEUP group both the 2% premix and 250 mg essential oils were incorporated into the compound feed. The microscopic studies revealed a hypertrophy process of the intestinal mucosa in the experimental groups, expressed by the villosities and glandular apparatus development, by extended capillary netting, as well as by development of the leukocyte infiltrate that was concentrated all along the mucosa chorion thickness.

Key words: medicinal herbs, broilers, histology

Score estimation of gain of female lambs from Ile de France breed in Bulgaria

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ABSTRACT

The aim of the study was to made a score estimation of average daily gain of female lambs from the Ile de France breed whit different types of birth in Bulgaria. The study was carried out on 55 female (singles and twins) lambs from the flock of the Institute of Animal Science – Kostinbrod, born in two consecutive years. On the ground of live weight at 10, 30 and 70 daily age were calculated average daily gain between 10-30 and 30-70 day of lambs, which was used for the base of the determination of score 0. The age for determination of average daily gain and the class interval between the scores were conformable to requirements of the Ile de France breed selection. It was established significant higher average daily gain between 30-70 day to singles and twins

born in 2004 to compare with 2005 ($P < 0.01$, $P < 0.05$). The percentage of singles got positive score estimation was higher than negative, while the percentage of twins got positive and negative score estimation was equal.

Key words: score estimation, live weight, average daily gain, female lambs

The immunological status of calves under influence of selenium compounds

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ABSTRACT

The influence of organic and inorganic selenium compounds injected to pregnant cows and to their calves after weaning on immunological status of calves was studied. Selenium compounds (sodium selenite or selenopiran) were injected to cows before 14 days to calving in dose 0.1 mg Se/kg live weight. Application of selenium compounds increased level of selenium, IgA, IgG in colostrum, and in blood serum of calves. The additional injections of sodium selenate and selenopiran to calves on 7 day after birth stimulated their humoral and cell immune response, activity of phagocytes and growth. The most effective selenium compound was selenopiran.

Keywords: sodium selenite, selenopiran, colostrum, blood serum, calves, phagocytosis, humoral and cell immune response.

Adrenal glands- and testes - function as an indicator of welfare in male BUT turkeys

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ABSTRACT

In the present study an evaluation on animal welfare (AW) in male turkey BUT 9 was performed through the relative weight of adrenal glands and testes, plasma corticosterone- and testosterone levels. The aim of the study was to determine the reliability of the same indices in the appraisal of poultry welfare.

Adrenal weights and plasma corticosterone levels of the I-st group (BUT 9 on a litter) were significantly higher than the II-nd one. On the contrary testis's weights and plasma testosterone levels in II-nd group (BUT 9 on a slat floor) were insignificantly higher than I-st group (BUT 9 hybrid on a litter) during the two experiments.

These results show that the weight of adrenal glands and plasma corticosterone levels, of immature BUT 9 male turkeys can be used as reliable indices for the

worsening of the poultry welfare. Unlike relative testis's weight and plasma testosterone levels are unreliably to be used as an evaluation of the poultry welfare of BUT 9.

Key words: poultry welfare, male BUT 9 turkeys, slat floor, litter, adrenal- and testes-weights, plasma corticosterone- and testosterone levels, aggressiveness.

Mechanism of development of growth of a body and reproductive organs of the hens in postnatal ontogeny

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ABSTRACT

Studied mechanism of development oviduct and alive weight of the hens. The growth of weight of a body of the hens is active on 1 and 2 months of development, and oviduct on 4 and 5. These parameters are reduced, accordingly on 6, 7 and 6 month. On a background of an intensive gain of alive weight during 1-120 days is marked "stagnant" increase of weight oviduct. The period is necessary to consider critical (120-150) days, when weight oviduct is increased in 104 times.

Key words: hen-layer, oviduct, reproductive organ, ontogeny

Study of some biochemical markers in a population of Romanian Spotted cattle

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ABSTRACT

The purpose of the paper is to study the biochemical markers of blood in a population of Romanian Spotted cattle reared in SCDB Târgu Mures. Horizontal and vertical electrophoresis was used according to the nature of the migration substrate, hydrolyzed potato starch and polyacrylamide, to determine the genotypes/phenotypes from the following loci: hemoglobin (Hb), serum transferrin (Tf) and serum albumin (Al). The identified genetic structures were used to characterize genetically the surveyed population and to determine the inheritance of these markers by the offsprings.

Keywords: cattle, biochemical markers, paternity

Genetic analysis of β -lactoglobulins in Brown cattle

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ABSTRACT

The paper presents the genetic analysis of β -globulins in a population of Brown cattle reared at SCDA Pitesti. The investigations used potato starch gel electrophoresis to determine the genetic structures at β -Lg locus. The frequency of the genes and genotypes were calculated and the balance state of the population; based on the production performance correlations were done between the markers identified by electrophoresis and the main traits of the milk production.

Keywords: cattle, lactoglobulins, electrophoresis

Lucina stud important centre for improvement of the Hutul breed

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ABSTRACT

The existence of the Hutul horse breed on the Romanian territory is faraway dated in time, some of the theories are starting that this horse comes from the savage kind of a mountain horse, near to the Eq. Tarpan ancestors. There is appreciated that the shaping cradle of the present kind of Hutul is represented by the North geographic part of Bucovina (Romania), the heart of this cradle being thus by the Lucina Stud. Historic chronic beginning in 1856, this stud having an important tradition in a Hutul breed improvement. The classic genealogical lines of Romanian Hutul there are Hroby, Ousor, Goral, Pietrosu, Prislop, and the main function of these genealogic father lines (father families) is of preventing the relative mating and preventing the rising of the consanguinity. The present dimension of the Hutul number in Lucina Stud (about 9 stallions and 50 mares) has mostly the significance for gene reserve for maintaining the breed, without the danger of a "genetic drift". The usually colors of the Romanian Hutul breed are the dark colors, and the most frequency are the brown bay. In a future the main use of the Hutul horse are still within the rural economy from the mountain area, for the public mating, for the formations works of a new horse types for the mountain area and within raiding horse tourism.

Use of methods of variational statistics in age morphology

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ABSTRACT

The statistical analysis of the data meeting among morphological scientific researches is circumscribed most frequently. Own experience of a statistical analysis of the criteria of Newman-Keilsa, Dannet given with the help is circumscribed by the example of change of relative mass of an ovary of hens in dependence on monochromic illumination.

Influence of the mode of the illumination on degree mineralization skeleton of the hens-layer

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ABSTRACT

The analysis of the influence of the orange illumination of the hens-layer happens to in article on level mineralization skeleton. For study degree mineralization of the skeleton of the hens-layer depending on mode of the illumination have conducted the experiment. In the course of experiment defined the concentration calcium, phosphorus and ashes in tibial bone. On result of the study came to conclusion that contents of the hens under orange illumination promotes the accumulation mineral substance in skeleton of the hens.

Key words: Orange, illumination, calcium, phosphorus, bone, hen-layer, tibia

Morphogenesis of ovary of the hens raised up at use of orange illumination

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ABSTRACT

With the purpose of study of influence of a spectrum of illumination on morphogenesis ovary of the hens in postembryonal ontogeny the modeling experience by a method of the balanced groups - analogues in conditions vivarium Penza State Agricultural of Academy was carried out. On the basis of the own researches which

have been carried out on 213 healthy hens, with application of modern variations statistics methods is found: monochromatic the illumination influences morphology ovary of the hens in postembryonal ontogeny. In particular, the cultivation of the hens at an orange spectrum of illumination causes authentic ($p < 0,01$) increase of absolute and relative weight ovary and body ovary of the hens, specific volume parenchymatous of a zone and specific volume follicle in ovary of the hens in comparison with control group of the hens, raise at standard polychromatic illumination.

Key words: hen-layer, orange illumination, ovary, ontogeny

Mushrooms cultivation as a method of waste bioconversion in livestock breeding and other farming industries

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ABSTRACT

The possibilities of waste (manure, compost, guano, litter, chaff, etc.) bioconversion in livestock and poultry farms are studied. The use of the waste as a substrate for edible fungi cultivation is suggested to solve the problem of waste recycling. The process of artificial mushroom growing proves to be limited by various negative factors. The intensification method is presented for cultivation of sowing mycelium of true mushrooms (*Agaricus bisporus* (Lange) Imbach) and oyster mushrooms (*Pleurotus ostreatus* (Fr.) Kumm.). The means of smoothing down the impact of the unfavorable factors due to application of non-organic selenium compounds is considered.