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**Axa prioritară 1 „Educație și formare profesională în sprijinul creșterii economice și dezvoltării societății bazate pe cunoaștere ,**

**Domeniul major de intervenție 1.5 „Programe doctorale și post-doctorale în sprijinul cercetării „**

**Titlul proiectului: Perfecționarea și Dezvoltarea Resurselor Umane pentru Cercetare și Inovare prin Școala Doctorală**

**Contract POSDRU/CPP107/DMI1.5/S/77222**

## **PROGRAMUL SIMPOZIONULUI**

**“AGRICULTURA MODERNĂ, DEZVOLTAREA DURABILĂ,  
PROTECȚIA MEDIULUI ȘI A BIODIVERSITĂȚII**

## **SYMPOSIUM PROGRAM**

**„MODERN AGRICULTURE, DURABLE DEVELOPMENT, ENVIRONMENT  
AND BIODIVERSITY PROTECTION**

**IAȘI**

**30 MAI 2013**



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## INVITAȚIE INVITATION

Echipa de management a proiectului POSDRU/CPP107/DMI1.5/S/77222 vă invită să luați parte la Simpozionul doctoranzilor **“AGRICULTURA MODERNĂ, DEZVOLTARE DURABILĂ, PROTECȚIA MEDIULUI ȘI A BIODIVERSITĂȚII”**, care va avea loc *Joi, 30 Mai 2013, Amfiteatrul A<sub>1</sub>MV*, Universitatea de Științe Agricole și Medicină Veterinară "Ion Ionescu de la Brad" Iași, Aleea M. Sadoveanu nr. 3.

The management team of the project POSDRU/CPP107/DMI1.5/S/77222 invites you to take part in the Symposium of PhD students **„MODERN AGRICULTURE, DURABLE DEVELOPMENT, ENVIRONMENT AND BIODIVERSITY PROTECTION”**, which will be held *Thursday, 30 May 2013, A<sub>1</sub>MV Amphitheatre*, University of Agricultural Sciences and Veterinary Medicine "Ion Ionescu de la Brad" Iasi, Alley M. Sadoveanu no. 3.



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## PROGRAMUL

### Simpozionului doctoranzilor de la USAMV din Iași

#### ➤ JOI, 30 MAI 2013

9 <sup>30</sup> - 10 <sup>00</sup>	Primirea și înregistrarea invitaților
10 <sup>00</sup> - 10 <sup>10</sup>	Deschiderea Simpozionului
10 <sup>10</sup> - 11 <sup>40</sup>	Prezentarea lucrărilor de la Secțiunea Agricultură
11 <sup>40</sup> - 12 <sup>00</sup>	Pauză
12 <sup>00</sup> - 13 <sup>30</sup>	Prezentarea lucrărilor de la Secțiunea Horticultură
13 <sup>30</sup> - 14 <sup>00</sup>	Pauză
14 <sup>00</sup> - 15 <sup>30</sup>	Prezentarea lucrărilor de la Secțiunea Medicină Veterinară
15 <sup>30</sup> - 16 <sup>00</sup>	Pauză
16 <sup>00</sup> - 17 <sup>30</sup>	Prezentarea lucrărilor de la Secțiunea Zootehnie
17 <sup>30</sup>	Închiderea Simpozionului

## SYMPOSIUM PROGRAM

### of the PhD students from USAMV Iasi

#### ➤ THURSDAY, 30 MAY 2013

9 <sup>30</sup> - 10 <sup>00</sup>	Reception and registration of guests
10 <sup>00</sup> - 10 <sup>10</sup>	Opening of the Symposium
10 <sup>10</sup> - 11 <sup>40</sup>	Paper presentation from the Agriculture Section
11 <sup>40</sup> - 12 <sup>00</sup>	Break
12 <sup>00</sup> - 13 <sup>30</sup>	Paper presentation from the Horticulture Section
13 <sup>30</sup> - 14 <sup>00</sup>	Break
14 <sup>00</sup> - 15 <sup>30</sup>	Paper presentation from the Veterinary Medicine Section
15 <sup>30</sup> - 16 <sup>00</sup>	Break
16 <sup>00</sup> - 17 <sup>30</sup>	Paper presentation from the Animal Husbandry Section
17 <sup>30</sup>	Closing of the Symposium



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Prof. Dr. Gerard JIȚĂREANU  
Prof. dr. N. MUNTEANU  
Prof. Dr. Constantin. LEONTE  
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Prof. Dr. Liviu Dan MIRON  
Prof. Dr. Benone PĂȘĂRIN  
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Prof. Dr. Constantin PASCAL  
Conf. Dr. Costel SAMUIL  
Prof. Dr. Gheorghe SOLCAN



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## SECTION I.

# AGRICULTURE

**MODERATOR: CONF. DR. COSTEL SAMUIL**

### THE EFFECT OF CHEMICAL FERTILIZERS AND REMAINING EFFECT OF ORGANIC FERTILIZERS UPON THE NUMBER OF SPIKES ON EAR OF WINTER WHEAT

**ANDRIEȘ IULIANA, CIURUȘNIUC ANA-MARIA**

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**ABSTRACT.** In bifactorial experience placed after the method of subdivided plots at Ezăreni station, Iași has watched the effect of nitrogen fertilizers (N0, N40, N80, N120, N160) applied on the next agrofunds: P64K64 ; manure 30 t/ha applied on pre-plant (sugar beet) and chaff 5 t/ha + the rest from sugar beet applied to winter wheat. It was found that the variants fertilized with chemical fertilizers and chopped straw P64K64 obtained higher values of spikes / ear to those fertilized with manure. With the increase of the dose of nitrogen increased the number of spikes / ear. Interaction of phosphorus and potassium fertilizers and N160 achieved the highest number of spikes/ ear 15.3.

**Key words:** wheat, fertilizer, spikes, ear.

### STUDY OF THE BEHAVIOUR OF CULTIVATED SPECIES OF THE GENUS *MONARDA* L. IN SUCEAVA COUNTY, TO INTRODUCE THEM IN CULTIVATION AS MEDICINAL, AROMATIC AND DECORATIVE PLANTS

**CIURUȘNIUC ANA-MARIA, ROBU T., ANDRIEȘ IULIANA**

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**ABSTRACT.** Genus *Monarda* L. comprises about 30 species of annual and perennial medicinal, aromatic and ornamental plants, belonging to family Lamiaceae. The gender is originating in the USA, Canada and Mexico and is grown in Europe, Asia.

This paper aims monarda behavior of three species, *M. didyma* L., *M. citriodora* Cerv. ex Lag. and *M. fistulosa* L. in the climatic conditions in Pojorita, Suceava county, to introduce their culture. The experience has been established both by direct seeding in the experimental field and the seedling, being made biometric measurements and observations to plant. The importance of this study is to determine which of the three species of the



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genus *Monarda L.* is most suitable to be cultivated in the climatic conditions of Pojorîta, Suceava county, identifying medicinal qualities, aromatic and ornamental.

**Key words:** *Monarda citriodora* Cerv. ex Lag., *Monarda didyma L.*, *Monarda fistulosa L.*, seeds.

## FINANCIAL ANALYSIS - METHOD OF ASSESSING THE INVESTMENT MADE BY SC NORD INTERMED CONSULTING GROUP S.R.L.

**ADRIANA SPÎNACHE (CĂS. MĂGUREANU)**

**ABSTRACT.** In order to make a decision investment, we must know the nature of that investment, amount of investment, maintenance costs, revenues, technical specifications, and not least economic efficiency.

The paper aims to answer the following questions:

1. What are the stages of financial analysis?
2. What are the indicators used in the financial analysis?
3. What are the limits of economic efficiency indicators, to determine if the investment is profitable or not?

The paper "Financial analysis - method of assessing the investment made by SC NORD INTERMED CONSULTING GROUP S.R.L." is based on a case study conducted at SC NORD INTERMED CONSULTING GROUP S.R.L. Suceava. The economic and financial indicators of the investment "Vegetable farm modernization SC NORD INTERMED CONSULTING GROUP S.R.L., through the acquisition of agricultural machinery and grain storage silos" were analyzed and the correlations between them was established. Effectiveness and viability of the project was determined by conducting a narrower financial analysis, calculating indicators: the investment, operating income, operating expenses, operating income rate, payback period, return on invested capital, the rate of coverage by cash flow, rate of medium and long-term debt, net present value, available cash at the end.

## COST-BENEFIT ANALYSIS - METHOD OF ASSESSING PUBLIC INVESTMENT BY BRĂEȘTI VILLAGE HALL, IASI COUNTY

**ADRIANA SPÎNACHE (CĂS. MĂGUREANU)**

**ABSTRACT.** The decision "to invest or not" must be taken after the indicators of economic efficiency are known. Economic efficiency in the public domain, is determined by cost-benefit analysis.

The paper aims to answer the following questions:

1. What are the stages of cost-benefit analysis?
2. What are the indicators, used in determining the efficiency of investment?



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3. What are the limits of economic efficiency indicators to be able to say if the investment is beneficial?

The paper "Cost-benefit analysis - method of assessing public investment by Brăești Village Hall, Iasi County" is based on a case study conducted at the Brăești village hall, Iasi County. We have analyzed the economic, finance and sensitivity indicators of investment "Electricity production by harnessing solar energy resources for public illumination at the Brăești Village, Iasi County" and have established correlations between them. Indicators that were analyzed: the total investment, payback period, net actualized value, annual benefits, annual cost, cost / benefit ratio, internal rate of return.

## STUDIES REGARD THIN LAYER DRYING OF ONION SLICES

**IONUȚ - DUMITRU VELEȘCU, IOAN ȚENU, VASILE DOBRE**

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**ABSTRACT:** Most agricultural products require drying process to preserve the quality of the final product. The quality of the products depends on many factors including the drying temperature and duration of drying time. The purpose of the present study was to test and to evaluate the effect of different levels of temperatures and air velocity on drying characteristics and quality changes of thin layer onion slices. Drying experiments were carried out using a convective hot-air dryer such that the hot air passed perpendicularly (from the bottom up) through a thin layer of onion slices. The drying air temperatures were 50 °C, 60 °C and 70 °C, while air velocity was constant at 2.0 m/s. Onion slices were not treated in any way before drying. Moisture content, drying rates are calculated and also represented in diagrams. Also, the ratio of the surface area and the volume was measured. Time evolution of measured parameters is analyzed and presented in diagrams. Three mathematical models (Page, Modified Page, and Henderson and Pabis) were examined for describing the drying behavior of onions slices under the above mentioned experimental parameters.

**Key words:** Drying kinetics, onion, dryer, mathematical modeling.

## POSSIBILITIES TO IMPROVE THE *FESTUCA VALESII* L. PERMANENT GRASSLANDS FROM NE OF ROMANIA

**CIPRIAN CIOBANU<sup>1</sup>, VASILE VÎNTU<sup>1</sup>**

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**ABSTRACT.** Permanent grasslands are an important source of green fodder and



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fiber needed for animal nutrition. The experiment held on a meadow of *Festuca valesiaca* L. in the region of Moldavia, aims to improve soil nutrient regime by means of organic and mineral fertilization, that could change the floristic composition in favor to the valuable species. Pasture fertilization with 20-30 t ha<sup>-1</sup> manure and N50+50 P72 caused production increases of 34-70%. Regarding floral structure, the predominant species are grasses (60-70%), followed by legumes (8-27% and forbes ranging 11-23%).

**Key words:** permanent grasslands, manure, yield, floristic composition.

## PARTICULARITIES REGARDING THE EVOLUTION OF ECONOMIC RESULTS FOR S.C. COTNARI S.A. IASI – REPRESENTATIVE ACTOR FOR ROMANIAN WINE MARKET

VASILIU MĂDĂLINA-OANA (CĂS. APETRE)

**ABSTRACT.** The wine market has certain particularities generated by the investment environment, the production technologies and the marketing strategies. Innovative measures in this area (for instance the implementation of online marketing and online trading) may differentiate one manufacturer from another and may generate the necessary competitive advantage.

The economic results represent elements of synthesis of the adopted strategies and of the directions that the manufacturers have taken and represent the foundation of further activities. Therefore a complete analyzes of the economic particularities comes a basic instrument in highlighting the business activity both internally and to the outside.

The paper aims to highlight the dynamic economic performance of SC. COTNARI S.A. Iasi by analyzing many economic indicators (structure, management, profitability) relevants for the companys activity on the context of the evolution of wine market aspects for Romania and the European Union.

## EVALUATION OF SOME WHEAT VARIETIES RESISTANCE TO INFECTION WITH PATHOGEN *TILLETIA CARIES* (DC) TUL.

C. I. ARSENE<sup>1</sup>, ANDREEA-MIHAELA BĂLĂU<sup>1</sup>, E. ULEA<sup>1</sup>

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**ABSTRACT.** Necessity to establish the presence and distribution of the pathogens in an area have a major impact on wheat plants because they have a high food share. Although, it can be relatively easily controlled by chemical seed treatments, in ecological agriculture this treatments is restricted, therefore cultivation of resistant wheat varieties have importance for agriculture. This study contains data about bunt resistance of 24 wheat varieties artificially infected with *Tilletia caries* (D.C.) Tul., sin. *T. tritici*. The experiment was





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organized in the Ezăreni farm from University of Agricultural Sciences and Veterinary Medicine in 2011-2012 year. Evolution of pathogen *Tilletia caries* (DC) Tul., observed on the varieties studied was record high variations of the attack. Some varieties have been shown to be resistant and others are registered in the attack maximum value of 12.78%.

**Key words:** bunt, wheat varieties, resistance



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## SECTION II. HORTICULTURE

**MODERATOR: PROF. DR. LILIANA ROTARU**

### EFFECT OF TERMIC TREATMENT ON PROCESSING APPLES

**BARCAN (BĂETU) ALINA LOREDANA<sup>1</sup>, PATRAȘ ANTOANELA<sup>1</sup>,  
ANDREI CORINA<sup>1</sup>, BĂETU M.<sup>1</sup>**  
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**ABSTRACT.** Vitamin C is one of the most important antioxidant supplied by fruits and vegetables. Therefore a reliable and easy method is needed for its determination. In this work, two methods for the determination of ascorbic acid were validated and compared in apples. The purpose of this study is to monitor the dynamics of ascorbic acid, enzyme activity, pH, acidity, soluble and total dry matter and humidity during the technological flow. Samples were taken at various stages of the technological process: raw material, washing stage, cleaning stage, blanching stage and finished product. In the analysis performed, it was observed that the thermic treatment had a decisive effect on the studied parameters.

**Key words:** ascorbic acid, ascorbat oxidase, superoxide dismutase, pH

### THE INFLUENCE OF SEVERAL PRE-FERMENTATIVE TREATMENTS ON WINES COMPOSITIONS

**M. CODREANU<sup>1</sup>, M. NICULAU<sup>2</sup>, C. COLIBABA<sup>1</sup>, I. MORARU<sup>1</sup>, V.  
V. COTEA<sup>1</sup>**

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine Iași

<sup>2</sup>Research Centre for Oenology - Iași branch of Romanian Academy

**ABSTRACT.** In this study we conducted a number of fourteen pre-fermentative treatments with oenological products in order to improve the composition characteristics of certain wines made from Tămăioasă românească and Aligoté grapes. During 2012 harvest, the grapes were processed following the classical wine-making technique. After six months of storage the wines were analysed. The used analysis methods for compositional characteristics were: Folin-Ciocalteu Index, Total Polyphenolic Index and CIE Lab 76. Metal content was determined by Shimadzu AA-6300 Spectrophotometer.

**Key words:** Tămăioasă românească, pre-fermentative treatment, calcium, papain



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# EFFECT OF GIBBERELLIN (GA<sub>3</sub>) APPLICATION ON PRODUCTIVITY AND QUALITY PARAMETERS OF TABLE GRAPE VARIETY COARNA NEAGRA (VITIS VINIFERA L.)

**ROXANA COȚOVANU<sup>1</sup>, LILIANA ROTARU<sup>1</sup>, RĂZVAN FILIMON<sup>1</sup>**

<sup>1</sup>University of Agricultural Sciences and Veterinary Medicine Iasi  
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**ABSTRACT.** *Introducing in the growing technology of vine varieties for table grapes of the hormonal biostimulating treatments can assured remarkable production increases and an improvement of the parameters that contribute to the growth of marketed production quality. This study aim to determine the optimal dose of gibberelline that can be applied to achieve a high production yield and a harmonization of quality indicators at vine variety for table grapes Coarna neagra grown in the areal of Iasi vineyard, Romania. Treatments were performed using the product of synthesis gibberellic acid (GA<sub>3</sub>) in concentrations of 25 ppm, 50 ppm and 100 ppm. In terms of experience, we found that at Coarna neagra the optimal dose of gibberelline applied was 50 ppm GA<sub>3</sub>, resulting in achieving a higher production qualitatively in comparison to control variant, the variety developing a tolerance at high concentrations of GA<sub>3</sub>. The treatment applied to inflorescences provided an increasing of production exceeding 18% and an increase in marketed production up to 80%, the option that presented the most important values of productivity and fertility characteristics was 25 ppm. It is noted that the number of seeds in berry remained constant and the concentration of antocyanin compounds was over 20% higher compared with untreated variant.*

**Key words:** *gibberellins, table grapes, Vitis vinifera L.*

# EFFECTS OF PRETREATMENTS AND MEDIA STATE OF AGREGATION ON CALLUS INDUCTION ABILITY IN ANTHR CULTURE OF CANNABIS SATIVA L.

**LUCA MIHAI ALEXANDRU**

**ABSTRACT.** *The callus induction ability in hemp anther culture, on different induction mediums in solid and liquid form was studied. In general, solid induction medium shows better response, except for Lovrin 110 and Zenit cultivars, inoculated on MS medium supplemented with 1 mg/l 2,4D (2,4-dichlorophenoxyacetic acid) + 2 mg/l KIN (N<sup>6</sup>-furfuryladenine).*

*Heat shock pretreatment duration influences callus induction in all analyzed cultivars.*

**Key words:** *Cannabis sativa, androgenesis, state of aggregation, pretreatment*



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# THE EFFECT OF CHEMICAL MUTAGEN AGENTS ON SOME MORPHOLOGICAL CHARACTERS TO *CORIANDRUM SATIVUM* L. IN $M_1$ GENERATION

LUPU ELENA-ANCUȚA<sup>1</sup>, LEONTE C.<sup>1</sup>, SPÂNU (MÎRZAN) OANA<sup>1</sup>

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**ABSTRACT.** *Coriandrum sativum* L. is an annual herb and belongs to the Apiaceae family (David Gh., et. al., 2003). In this paper we present some biometrical data obtained during vegetation period of coriander, for seeing the effect of some mutagen agents on the coriander plants. The  $M_1$  generation of plants was obtained from treated seeds with three types of chemical mutagen agents, like: ethidium bromide, colchicine and dimethyl sulfate, in concentration of 0,02%, 0,04%, 0,06%, 0,08%, each concentration having four and six hours for action time. Thus, it was determined: the number of fruits/plant, number of umbels and weight of fruit/plant. Thus, the wealth of new biological material can be isolated useful forms for use in the process of creating new varieties (Leonte, 2011).

**Key words:** colchicine, ethidium bromide, dimethyl sulfate, *Coriandrum sativum* L.

## OBTAINED RESULTS IN THE BREEDING OF THE CHERRY ASSORTMENT WITH EXTRA EARLY AND EARLY MATURATION AT S.C.D.P. IASI

IUREA ELENA<sup>2</sup>, GRĂDINARIU GICĂ<sup>2</sup>,

CORNEANU GELU<sup>1</sup>, SÎRBU SORINA<sup>2</sup>, PANDELEA ALIN-VASILE<sup>2</sup>

<sup>1</sup>Stațiunea de Cercetare Dezvoltare pentru Pomicultură Iași

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**ABSTRACT.** The cherry assortment in Romania contains a lot of species with average maturation of fruits. The current tendency is to realize a balance provided by reducing the species weight with average age of maturation and by increasing the extra early species weight (in May) and of the late ones (after 1st of July). At SCDP Iași, there were selected 6 hybrid elites of cherry with extra early and early maturation, from the biological material resulted from hybrid combinations of 1984-1987, from which two of them have been approved as new species in 1999's with the name of Cetățuia and in 2001 with the name of Cătălina and four elites, HC. 871102, HC. 871703, HC. 870501 și HC. 871304, with approving perspectives are under observation for their registration for approving at I.S.T.I.S. Bucharest.

The paper's aim is to present the valuable features of some cherry species and



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hybrids with approving perspectives, that would improve the inland cherry assortment with species with extra early maturation and quality fruits.

**Key words:** species, cherry, hybrid elites, maturation, early.

## MONITORING LEPIDOPTERAN PESTS SPECIES REPORTED AND CAPTURE IN THE APPLE ORCHARD OF THE S.C.D.P. FĂLTICENI

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**ABSTRACT:** Observations were made in 2012 in the apple orchard of the SCDP Fălticeni the treated chemically lot. In this paper we present comparative results of monitoring and capture of defoliating Lepidoptera plantations raised under conventional treatments to combat the chemical lot (Talmaciu M., Talmaciu Nela, Toader D., 2005), the data obtained have been reported three species namely *Adoxophyes orana* (164 samples collected) *Pandemis heparana* (42 samples collected) *Archips podana* (490 samples collected). Most samples were collected in the larval stage, of different ages, but there were samples collected in the pupa stage. The pheromone traps method, type atraPOM, atraBLANC, atraRET, atraPOD, atraVIR and atraNUB have collected 10066 samples of butterfly species: *Adoxophyes orana*, *Archips podana*, *heparan Pandemis*, *Cydia pomonella*, *Phylonorycter blancardella*, *Hedy nubiferana*, *Tortrix viridana*.

**Key words:** tortricides, gracillariides, apple orchards, chemical treatment

## STUDIES REGARDING THE BEHAVIOR OF SOME WILD SPECIES INTRODUCED IN CULTURE IN PEDOCLIMATIC CONDITIONS FROM THE IAȘI

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**ABSTRACT.** This paperwork presents aspects of seed propagation of wild plants with ornamental characters, in order to introduce them into the culture. There were studied three species identified in the wild flora of the Cheile Dobrogei (*Alyssum murale* Waldst. & Kit, *Dianthus nardiformis* Janka și *Silene compacta* Fisch.). The experimental cultures were established using as planting material transplanters seedling and non transplanters seedling. The experiences aimed not only the best option for crop establishment, but also keeping the ornamental character. The results obtained showed that all species (*Alyssum murale*, *Dianthus nardiformis* Janka și *Silene compacta* Fisch.) can both be used as seedling



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transplanters and non transplanters.

**Key words:**, ornamental value, wild plants, *Alyssum*, *Dianthus*, *Silene*, etc.

## STUDIES REGARDING THE POTENTIAL OF DECORATIVE PLANTS OF THE GENUS *LILIUM*

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**ABSTRACT:** The genus *Lilium* includes species from subtropical climate to the temperate climate, spread especially in the Middle East and Europe and on the American and African continents. Cultivated plants are found in the wild flora and can have multiple uses in various fields, but particularly used as ornamental plants. This paper aims to make a brief presentation of the genus *Lilium* and to study the culture possibility of the hybrids of the Asian group. There are also references to the behavior under culture "ex situ" of a species of *Lilium* with a decorative value, from the spontaneous flora of Romania (*Lilium martagon*). The results demonstrate the plants ability to adapt to the culture in the field, unprotected and protected culture (in greenhouses and tunnels).

**Keywords:** genus *Lilium*, asiatic hybrids, *Lilium martagon*.



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## SECTION III.

# VETERINARY MEDICINE

**MODERATOR: PROF. DR. VASILE VULPE**

### PROLIFERATIVE INDEX EVALUATED BY IMMUNOHISTOCHEMISTRY IN BOVINE CUTANEOUS FIBROPAPILOMAS

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**ABSTRACT.** Bovine cutaneous fibropapillomas are benign hyperproliferative lesions naturally induced by bovine papillomavirus type 1 and 2, which sometimes can undergo neoplastic transformation under action of different carcinogens. The induced proliferative lesions are characterized by a high rate of epithelial cell proliferation. The purpose of this study was to evaluate proliferating cell nuclear antigen (PCNA) immunoreactivity in BPV-1/2 positive bovine fibropapillomas and to determine the proliferative index (PI).

In order to assess the PI, six tumor samples were selected and 5  $\mu$ m sections were cut. PCNA antibody (M0879, clone PC10, Dako) was investigated using the avidin-biotin-peroxidase system (LSAB; Dako). The percentage of nuclei immunostained for PCNA, out of 500 epithelial cells at X400 magnification over 10 fields was calculated and defined as PI.

PCNA immunoreactivity was detected in all tumour samples with a specific nuclear staining in basal and suprabasal layers. The proportion of labelled nuclei was 85.5%, 94.8%, 98.3%, 94.3%, 77.66%, respectively 89.7%, with a mean PI of 91.66%.

PCNA is essential for progression through the cell cycle and it is a necessary component of the DNA replication machinery. In this study, we found high PCNA immunoexpression in six out of six bovine BPV-1/2 positive fibropapillomas.

The high expression of PCNA could have an important role in the development of bovine fibropapillomas.

**Key words:** PCNA; proliferative index; BPV; fibropapilloma



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# GLYCAEMIC CURVE ASSESSMENT, A MONITORING TOOL FOR ADEQUATE INSULIN THERAPY FOR DIABETES MELLITUS IN CATS

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**ABSTRACT.** Blood glucose curve is one the most important test that needs to be considered when dealing with a diabetic patient. The test holds a few key points that still impose difficulties when interpreted. An accurate interpretation of a blood glucose curve helps clinicians to establish an appropriate treatment protocol.

The main aspects considered when interpreting a blood glucose curve, are the initial blood glucose before the insulin administration, the onset of insulin action, the action peak, the nadir, defined as the lowest point of the blood glucose after the administration of insulin and the length of insulin action. In order for a blood glucose curve to be reliable, other primary or secondary pathologies that might interfere with the insulin activity need to be excluded or addressed if present.

Serial blood glucose curves are essential when dealing with a poor response to the insulin treatment and for an adequate insulin therapy protocol. Also when the dose or type of insulin are altered, or as routine periodic evaluation test. Clinicians are able to establish an appropriate dose of insulin, with minimal risks, on the base of blood glucose curve data.

**Key words:** glucose curves, cat, diabetes, Somogy, portable blood glucose meters

# DNA FRAGMENTATION INDUCTION USING HYDROGEN PEROXIDE A COMPARATIVE IN VITRO STUDY ON SEMEN FROM DAIRY AND BEEF BULL

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**ABSTRACT.** Aim of study: to investigate the extent to which spermatozoa from two different breed bulls showed a different sensitivity to oxidative stress consecutive hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) treatment.

**Material and methods:** the DNA fragmentation index was determined using the sperm chromatin structure assay (SCSA), which assesses the susceptibility of sperm deoxyribonucleic acid (DNA) to acid-induced denaturation using the metachromatic dye acridine orange (AO). Three different experiments were performed for each of two bulls, the





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mean $\pm$ SD being determined.

*Results:* the spermatozoa incubated for 6 hours, revealed a dose-dependent increase in the DNA lesions expressed as DNA fragmentation index (DFI%), significant from a concentration of 150 mM,  $p \leq 0.03$  for beef bulls and  $p \leq 0.01$  for dairy bulls. The highest percent of spermatozoa with damaged DNA, 20.58% (mean $\pm$ SD) for dairy bull respectively 21.97% (mean $\pm$ SD) for beef bull was obtain after the treatment with 300 mM H<sub>2</sub>O<sub>2</sub> and incubation for 6 hours.

*Conclusions:* Dairy bull spermatozoa seem to be more sensitive to DNA fragmentation induction using H<sub>2</sub>O<sub>2</sub> comparative with beef bull spermatozoa.

## INVESTIGAȚII EPIDEMIOLOGICE ȘI ANATOMO-CLINICE PRIVIND INFECȚIA CU CORONAVIRUSURI LA PURCEII SUGARI

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**ABSTRACT.** Coronavirusurile cuprind o largă familie de virusi ARN ce infectează epiteliul digestiv, respirator și țesutul nervos. Sunt patogene pentru majoritatea speciilor de mamifere, păsări și la om și traversează foarte rar bariera de specie. La suine există patru specii de coronavirusuri patogene, virusul gastroenteritei transmisibile (VGET), virusul diareei epizootice porcine (VDEP), coronavirusul respirator porcin (CVRP) și virusul hemaglutinant care produce meningoencefalita (Boala vomitării și a deshidratării). Acestea se aseamănă destul de mult din punct de vedere a structurii genomice, gradul de înrudire antigenică fiind însă mai mult sau mai puțin pronunțat. Scopul acestui studiu este de a determina ponderea infecțiilor în funcție de specie și mortalitatea pe afecțiuni la purceii sugari, urmărind intensitatea simptomelor și modificările anatomoclinice și histopatologice din intestinul subțire și limfonodurile mezenterice ale purceilor cu enteropatii. Studiul epidemiologic s-a efectuat pe baza înregistrărilor efectuate în două unități de creștere din județul Iași și din județul Bacău. Probele de țesut au fost fixate în formol 10% și înglobate în parafină. S-a observat că mortalitatea cea mai mare apare la purceii sugari, în vârstă de 10 zile – 3 săptămâni, iar principala cauză a acesteia o reprezintă enteropatiile. Principalele semne clinice sunt diareea, deshidratarea și slăbirea accentuată. La examenul anatomoclinic s-au identificat majoritatea leziunilor specifice în GET și DEP – stomac și intestin subțire destins de gaze, limfonoduri mezenterice mărite în volum și atrofia vilozităților. La nivel histopatologic principalele leziuni observate în intestinul subțire, jejun, au fost: reducere și atrofie completă a vilozităților intestinale, citoliza și vacuolizarea enterocitelor și prezența incluziilor de hialin, modificări ale musculaturei (atrofie și edem), ectazia vaselor limfatice, limforeticulita limfohistiocitară difuză și în focare. Atât aspectele clinice cât și cele anatomopatologice corespund cu datele din literatura de specialitate privind acțiunea patogenetică a coronavirusului la purceii sugari. În investigațiile ce urmează se va confirma



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diagnosticul și tipul de virus care a determinat fiecare entitate morbidă.

**Cuvinte cheie:** coronaviruză, examen histopatologic, atrofie viloză

## INFLUENCE OF BODY WEIGHT IN CAUDA EQUINA SYNDROME PATTERN – A RETROSPECTIVE CT EVALUATION OF LUMBOSACRAL JUNCTION IN DOGS

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**ABSTRACT** A significant narrowing of the spinal canal at the level of lumbosacral junction (LSJ) is clinically expressed by cauda equine syndrome (CES).

The aim of the study was to investigate the influence of body weight (BW) in the lesional pattern of LSJ in dogs with CES.

The CT lesional patterns of 60 dogs with CES were retrospectively evaluated. There were 45 males and 15 females, mean age  $7.56 \pm 3.15$  (range 1-15 years) and mean weight  $29.5 \pm 13.93$  (range 4-66 kg). The dogs were divided by BW in three groups: group 1: 0-15 kg, group 2: 15-30 kg, group 3  $\geq 30$  kg. Each lesion observed was correlated to the BW. All data were statistically analyzed with SPSS 20 software. Spearman's test was used for analyzing correlations with a  $p < 0.05$  significance level.

No correlations were observed for group 1. In the group 2 positive correlations were observed for vacuum phenomenon with spondylolisthesis ( $r=0.79$ ;  $p<0.01$ ), and Schmorl's node ( $r=0.44$ ;  $p=0.04$ ), and for foraminal stenosis with the endplate sclerosis ( $r=0.53$ ;  $p=0.01$ ) and with arthrosis of the articular processes ( $r=0.47$ ;  $p=0.03$ ). In the group 3 correlations were positive for spondylosis deformans and foraminal stenosis ( $r=0.55$ ;  $p<0.01$ ), and negative between spondylolisthesis and endplate sclerosis ( $r=-0.47$ ;  $p<0.01$ ).

CT examination allowed the identification of different type of lesions in dog's LSJ. Increasing in BW has influenced the development of degenerative lesions on LSJ in dogs with CES.

The BW determines the lesional pattern of LSJ in dogs with CES.

**Key words:** CT, cauda equine syndrome, dog, body weight



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## CLINICAL, RADIOLOGICAL AND MORPHOLOGICAL ASPECTS IN CHYLOTHORAX IN CATS – 5 CASE SERIE

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**ABSTRACT.** Chylothorax represents the accumulation of lymph (chyle) within the pleural space. It results from the leakage of intestinal lymph from disrupted, obstructed or abnormal thoracic lymph channels.

Common causes are: thoracic duct rupture, lymphangiectasia of the anterior portion of the thoracic duct due to compression from anterior mediastinal masses on anterior vena cava, cardiac insufficiency (dirofilariasis, cardiomyopathy), hyperthyroidism and anterior vena cava thrombosis. Other causes are mediastinal lymphoma, trauma, torsion of a lung lobe, congenital or idiopathic chylothorax.

Clinical symptoms are: respiratory distress, cough, faint heart sounds, fatigue and polydipsia. When the chylothorax is old, weight loss and anorexia are present

In the radiology service of FMV Iași, during the last year (2012), 44 cases of cats with respiratory distress came to consult. All of them were radiologically examined, and 13 of them representing 29,5 % were diagnosed with pleural effusion. Thoracocentesis was performed on the cats and macroscopic, cytologic and microbiologic exams followed.

Five cases were diagnosed with chylothorax. The etiological diagnostic was established: one case was trauma determined, two of them were caused by lymphosarcoma, one was congenital recurrent chylothorax and one was cardiac insufficiency caused chylothorax.

**Key words:** Chylothorax, pleural effusion, thoracocentesis.

## OBSERVATIONS CONCERNING THE VALUES OF BIOCHEMICAL PARAMETERS IN COWS DURING PUERPERIUM

**FLORIN NECHIFOR, DAN DRUGOCIU, PETRU ROȘCA, ȘTEFAN CIORNEI, IULIAN IBĂNESCU**

**ABSTRACT.** The gynecological survey was performed during January and March 2013, on a herd of 10 cows, in a farm from North-Eastern Romania.

The determinations of the biochemical parameters were effected in the first 10-14 days after parturition.

The mineral substance Calcium (Ca) showed values between 8.37 mg/ml and 9.77 mg/dl, which are close to the lowest physiological value. The cause of that is the high implication of the cow in the process of lactogenesis.



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The values of liver transaminase (ALT) were between physiological values, which indicate a normal liver activity. Only the first 2 cows showed high values of liver transaminase. In first one ALT had a value of 70.7 mg/dl, this cow being suspected of liver insufficiency, cholestasis, liver steatosis, cirrhosis, fasciolosis, myopathies trauma and inflammatory processes. In the second one, ALT had a value of 59.3 mg/dl, this cow being suspected of hepatic insufficiency, cholestasis, steatosis, cirrhosis, fasciolosis, myopathies, trauma.

Glucose level was between the physiological limits, showing values between 53.1 mg/dl and 99.6 mg/dl. The same thing can be said about creatinine, with values between 0.69 mg/dl and 1.75 mg/dl.

**Key words:** cow, puerperium, biochemical parameters

## IN VITRO SELECTION OF ISONIAZID-RESISTANT MUTANTS OF MYCOBACTERIUM TUBERCULOSIS COMPLEX STRAINS

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**ABSTRACT.** The chemical agent used to test *in vitro* is isoniazid, which is part of Group 1 anti-tuberculosis drugs (first-line oral AB) according to the classification given by WHO (WHO, 2009).

The mechanism of its action against mycobacteria has been discovered more than 50 years ago, yet the mechanism of action of this antituberculosis drug is still controversial.

To be active against *Mycobacterium tuberculosis*, isoniazid needs to be activated by the KatG enzyme, which is a catalase-peroxidase.

The study consists of selection and determination of *in vitro* mutations associated with resistance profile of mycobacterial strains tested against isoniazid.

One of the key objectives of the research was to improve our ability to detect and interpret the mutations responsible for resistance to isoniazid. To this end, there were selected INH-R mutations *in vitro* to study in an isogenic context, the effect of mutations in mycobacterial strains.

For this study, we used two reference strains of *Mycobacterium tuberculosis* H37Rv and H37Ra.

Mutants were obtained on Middlebrook 7H11 culture medium and transplanted on Löwenstein-Jensen culture medium. *atG*, *iknH* genes and its promoter were sequenced with the identification of 65 mutants selected *in vitro*.



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*Isoniazid resistance in the mycobacterial strains is most often associated with mutations in katG, which are the most common. In this case, after sequencing, there were identified only the alteration changes localized in katG.*

*In this study, the mutants obtained in vitro do not reflect the usual mechanisms of INH observed in isolated strains in vivo.*

*The most common mutation found in the INH-R strains (KatG S315T) was not found in INH-R mutants, which shows deletions in KatG for about half of the mutants.*

*An analysis of new mutations that can confer resistance to INH should be continued in order to further clarify the complex mechanism of action of this antituberculosis drug.*

**Key words:** Mycobacterium tuberculosis; Isoniazid; KatG; InhA.



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## SECTION IV.

# ANIMAL HUSBANDRY

**MODERATOR: PROF. DR. IOAN MIRCEA POP**

## HEAVY METAL AND PESTICIDE CONTAMINATION OF MAIZE SILAGE DERIVED FROM TWO DIFFERENT PRODUCTION SYSTEMS (CONVENTIONAL AND ORGANIC)

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**ABSTRACT** *Organic agriculture is a current subject due to the increase concern of consumer toward healthier products. Animal feed is the first link in obtaining safer and higher quality food.*

**Aim:** *The aim of this paper was a comparative analysis of heavy metals (Pb, Zn, Cd, Cu) and pesticide contamination (organochlorine and organophosphate) in maize silage samples, derived from two farms in the North-East part of Romania, with different production systems.*

**Methods:** *samples were analyzed for heavy metals using atomic absorption spectrometry (AAS) and gas chromatography for pesticide detection.*

**Results:** *Lead and Cadmium concentration was higher in samples derived from the conventional system and Copper concentration was higher on samples derived from the organic one ( $p \leq 0.001$ ), while for Zinc concentration no significant difference was observed ( $p \geq 0.05$ ). Pesticide residues were below 0.05 mg/kg detection limit for organochlorine and 0.01 mg/kg for organophosphate.*

**Conclusion:** *Lower toxic heavy metal concentration and absence of pesticide residues in animal feed is a desideratum for healthier animals and therefore for safer products.*

**Discussion:** *Toxic heavy metals concentration was higher in maize silage samples derived from conventional production system but they were below the admitted limit set by the Commission Regulation (EU) No 574/2011.*

**Keywords:** *heavy metal, pesticides*



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## THE INFLUENCE OF DIET AND GROWTH CONDITIONS ON BODY WEIGHT IN TURKEY HYBRIDS BIG BUT 6 AND CONVERTER

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**ABSTRACT.** Substantial increase in the consumption of turkey meat was the basis for this research, the aim being the weight comparing growth parameters obtained by two hybrids recognized worldwide for meat production, respectively Big BUT 6 (L1 females and L2 males experimental group) and Converter (L3 females and L4 males). The research was conducted on a total of 800 samples of technologically grown under similar conditions (up to halls blind, conditioned on permanent litter, feeding ad libitum with the same fed). The birds were grown up to 17 weeks for females and 20 weeks for males. Further research showed a lower weight increase in birds that have made loads L1 and L2 compared with L3 and L4; so at the 14 weeks the average weight for groups of L1 and L2 was 9090g and 12610g, to of 9130g and 12900g as recorded in L3 and L4. At both slaughter ages (17 and 20 wk) hybrid BUT Big 6 proved the superiority of registering an body weight of 11500g and 20390g for L1 and L2 compared to 11010g and 20370g as determined in L3 and L4.

*Keywords:* turkey, body weight, , slaughter age

## HEAVY METALS CONTENT OF MIXED FEED USED IN LAYING HENS FEEDING IN DIFFERENT SYSTEMS OF PRODUCTION (CONVENTIONAL AND ORGANIC)

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**ABSTRACT.** The aim of this study was to identify and the comparative analysis of heavy metals content (lead, cadmium, copper and zinc) determined for 10 samples of mixed feed collected from two units from Romania with different systems in hens egg production (conventional and organic), activity which ensure the safety and the innocuity of mixed feed. Premixtures have contained similar ingredients, except for the chemical synthesis and of animal origin which are not allowed in organic production.

For the determination of heavy metals content (Pb, Cd, Cu, Zn) of mixed feed samples was used atomic absorption spectrophotometry method in flame (AAS), using atomic absorption with flame GBC-AVANTA apparatus in order to standards and legislation.

The results showed that heavy metals present in the samples analyzed were lead,



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cadmium, copper and zinc. Statistical analysis, revealed significant differences between the mean values calculated for mixed feed samples derived from conventional system compared with the ecological one for lead ( $0.502 \pm 0.045$  vs.  $0.128 \pm 0.012$  mg/kg), cadmium ( $0.034 \pm 0.002$  vs.  $0.024 \pm 0.002$  mg/kg), copper ( $1.706 \pm 0.053$  vs.  $4.616 \pm 0.197$  mg/kg) and for zinc the differences were insignificant ( $3.748 \pm 0.147$  vs.  $2.095 \pm 0.048$  mg/kg).

The levels of lead and cadmium contamination in all the samples of mixed feed were relative low and the assessed values were under the admitted maximal limits established by the MAAP Ord. no. 547/2011.

*Key words:* heavy metals, mixed feed, organic/ conventional.

## EVOLUTION OF SOME PHYSICAL AND CHEMICAL PARAMETRES OF POULTRY MEAT STORED UNDER REFRIGERATION CONDITIONS IN VARIOUS TYPE OF PACKAGING

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**ABSTRACT.** The research was carried out on samples taken from pectoral muscles, individually packed and stored for 10 days, at different parameters (Lc stored at + 4°C, 95% RH, packed in polyethylene bags; Lexp-1 stored at + 4°C, 95% RH packed in Stretch trays; Lexp-2 stored at + 4°C, 95% RH packed in BDF (under a modified atmosphere) trays).

During this period, was made daily determinations on color, pH and in easily hydrolysable nitrogen content. Our results showed that there was a significant correlation between muscle pH, color variation and easily hydrolysable nitrogen content. Thus at the end of 10 days of storage for the group Lc to a pH of 6.34 was obtained a content of 34.03 mg NH<sub>3</sub>/100 g and color values (L\*-57.91, a\*-5.71, b\*-18.31), for samples packed in Stretch trays pH was lower with 0.78 than the Lc and with 1.58 higher than in samples packed in BDF trays. Regarding easily hydrolysable nitrogen content, Lexp-2 had an content with 22.21% lower than Lc, respectively 19.64% beside Lexp-1.

The final conclusion was that in order to preserve the freshness of poultry meat is recommended packaging in BDF trays (in a controlled atmosphere) and storage at + 4°C/ RH 95%.

*Key words:* meat quality, poultry, packaging, refrigerated.





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## RESEARCHES REGARDING THE DEGREE OF RELATEDNES AND KINSHIP OF GREY STEPPE BREED FROM SCDCB DANCU

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**ABSTRACT.** *Steppe Grey is an ancient breed of cattle that can be found on the present territory of our country since ancient times. In our country Steppe Grey is a breed of cattle considered at risk of extinction (having fewer than 1000 head), in danger of reach the critical limit of less than 100 animals, according to risk categories used by FAO.*

*This paper has proposed calculating the degree of mating and inbreeding between female Gray cattle from SCDCB Dancu, in number of 48 heads and between bulls used at Ia and these, only 26.61 % of the female have between them relationship of relatednes and kinship ranging between 0.33 % for relatednes and kinship coefficient of 0.0156 / 0.0078 and 0.08 % for a factor of relatednes and kinship of 0.6125 / 0.30625.*

**Key word:** *Steppe Grey, relatedness, kinship*

## IEF TECHNIQUE IN ORDER TO GENOTYPE A HOLSTEIN-FRIESIAN NUCLEUS EXPLOITED IN THE NORTH-EAST OF ROMANIA

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**Abstract.** *Dairy farmers are nowadays adopting the molecular profiling in order to get some useful information for accelerating the selection process. Knowing the genotypes of dairy cattle and the positive associations between the genetic variants and production traits, helps the farmers to keep in their batch only the valuable animals. In cattle milk are six major proteins divided in casein fraction and whey fraction. These proteins have a large number of genetic variants, some of these being correlated with milk composition and milk production traits. This study is part of my PhD thesis.*

*The aim of the current paper is to identify the genotypes and to calculate genotype and allele frequencies for a nucleus of Holstein-Friesian cows exploited in the North-East of*



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Romania. Based on our research, we identified common genetic variants for the six loci coding the major milk proteins: alpha-casein  $S_1$  ( $\alpha S_1$ -CN); beta-casein ( $\beta$ -CN); alpha-casein  $S_2$  ( $\alpha S_2$ -CN); kappa-casein (K-CN); beta-lactoglobulin ( $\beta$ -LG) and alpha-lactalbumin ( $\alpha$ -LA). At  $\alpha S_1$ -CN locus, two genotypes were observed: BB and BC. The  $\alpha S_1$ -CN BB genotype recorded the highest frequency (0.94), while the C allele recorded a low frequency (0.03). For  $\beta$ -CN locus  $A_1A_2$  și  $A_2A_2$  genotypes recorded the highest frequencies (0.26 for both genotypes), while the  $\beta$ -CN  $A_2C$  and BB had very low frequencies (0.03 each). For  $\alpha S_2$ -CN system only one genotype was identified - AA,  $\alpha S_2$ -CN A allele having a frequency of 1.00. For the K-CN locus, three genotypes were observed: AA, AB and BB. K-CN AB genotype recorded the highest frequency (0.69). As for the whey proteins, at  $\beta$ -LG locus we identified three genotypes (AA, AB and BB), the highest frequency being calculated for  $\beta$ -LG AB (0.44), while in system  $\alpha$ -LA there is monomorphism for allele  $\alpha$ -LA B.

**Key words:** Holstein Friesian breed, polymorphism, milk proteins, IEF.

## ELECTRICAL STUNNING VOLTAGE ON BLEED OUT, SENSORY AND COLOR PARAMETERS IN CHICKEN MEAT QUALITY

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**ABSTRACT.** In commercial slaughtering, the major goal of processing plants is to reduce meat and carcass defects, especially those caused by electrical stunning. Experiments were conducted to compare the effects of a high current (HC) stunning system to a low voltage (LV) stunning system on broiler meat quality.

A total of 200 broiler chickens were individually stunned at 0, 25, 50, 60, 100 volt alternating current, time between stunning and slaughter being 12 s, with a time for bleeding of 100 s.

Moderate stunning (50 to 60 V AC) it is more effective in bleed-out (48.98 - 51.03%), giving better carcass quality, without spots, red wings or broken bones. Descriptive panel showed a significant preference for breast over leg meat ( $p < 0.01$ ), while for  $L^*$ ,  $a^*$  or  $b^*$  was not found significant difference ( $p > 0.05$ ) between stunning voltage values.

In conclusion, had been showed that the applied electrical voltage for stunning significantly affects the rate of bleed out in broilers, being difficult to establish stunning



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optimal voltage.

*The information can be used in order to optimize the slaughtering technology with chicken meat quality and financial profit.*

**Key words:** *Electrical stunning, blood loss, broiler carcasses quality*