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Friedrich-Schiller University Jena

Agricultural University of Tirana

First International Conference on "Biotechnology in Agriculture", at Agricultural University of Tirana, ALBANIA

(22–23 April 2014)

Abstract Book

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Talks

Beneficial and pathogenic fungi in the rhizosphere: How do roots distinguish?

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A huge number of beneficial and pathogenic fungi release biomolecules into the rhizosphere which initiate signaling events in the roots leading to mutualistic or pathogenic plant/fungus interactions. The combination and concentration of the individual biomolecules in the rhizosphere is critical for the plant´s decision to invest in either growth or defense. These biomolecules activate receptors in the roots and induce cytoplasmic calcium elevation in a phosphorylation-dependent manner. Furthermore, they stimulate phospholipid signaling and AGC kinase activities which coordinate the balanced response between growth/development and defense, by cross-talking to the Ca^{2+} signals. We use transgenic Arabidopsis and *Nicotiana attenuata* plants expressing the calcium sensor aequorin to isolate and identify biomolecules from the exudates of the beneficial root-colonizing fungi *Piriformospora indica* and *Mortierella hyalina*, and from the pathogenic fungi *Alternaria brassicae* and *Verticillium dahliae.* The exudate components induce a rapid (< 90 s) and transient increase in cytoplasmic calcium levels in the roots. We isolated Arabidopsis non-allelic EMS mutants which do not respond to these biomolecules. Their initial characterization has demonstrated that the calcium response is necessary for the proper plant response to the fungi, and that some mutants are impaired in abscisic acid (ABA) signaling. I will give a progress report on signaling events which allow roots to distinguish between beneficial and pathogenic fungi in the rhizosphere.

Keywords: Arabidopsis, *Nicotiana attenuata*, beneficial fungi, pathogenic fungi, cytoplasmic calcium, ABA signaling

Molecular biological detection method for yeasts, lactic acid bacteria and acetic acid bacteria in grape, must and wine

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The groups of microorganisms that have been isolated from must and wine consist of yeasts, lactic acid bacteria and acetic acid bacteria. This particular microbial composition and succession during winemaking have a great influence on the sensory and the quality of the wine. Therefore, it is desirable to identify the involved species reliably and in a timely manner. This is also true for the starter cultures *Saccharomyces cerevisiae* and *Oenococcus oeni*, which are used for the alcoholic and malolactic fermentation. Besides these starter cultures about 100 species of yeast, 22 lactic acid bacteria and 12 acetic acid bacteria were detected on the grapes, in must and wine. The application of conventional microbiological analyzes takes several days and is not suitable as timely detection methods. In recent decades, however, molecular methods have been established that allow rapid and reliable identification and cell counting of microorganisms without prior cultivation. Therefore, we have performed a comparative sequence analysis of the ribosomal RNAs and the corresponding intergenic regions, fingerprinting methods such as the SAPD-PCR (specifically amplified polymorphic DNA), molecular probe techniques and mass spectrometric techniques such as MALDI-TOF-MS (matrix assisted laser desorption ionization time-of-flight mass spectrometry) for species and strain identification. The combination of these methods allowed us to identify frequently wine-related microorganisms down to the strain level from all known wine-associated groups. The reliable determination of strains is important not only for monitoring the must fermentation, but already in the run-up of wine making for the characterization of the composition of starter cultures.

Keywords: wine research, alcoholic fermentation, malolactic fermentation, species identification, *Saccharomyces*, *Oenococcus*

Increase of starch accumulation in duckweed (Lemnaceae) under abiotic stress

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Abiotic stresses often result in suppressed photosynthesis and growth of plants. We addressed the question whether growth is delayed because of inhibited photosynthesis. Using several duckweed species and creating stress to these plants by (1) application of heavy metals, (2) application of salt (NaCl), and (3) lack of defined nutrients, we showed that this is not the case. Instead, photosynthesis was inhibited to a lesser degree than growth. This became evident by detecting the accumulation of starch under these stress conditions. (1) Cobalt ions and other heavy metals (Cd^{2+}, Ni^{2+}, Tl^{+}, Hg^{2+}, Ag^{+}) induced the accumulation of starch at concentrations when growth was almost completely suppressed (80%). In *Lemna minor*, application of 100 μM Co^{2+} resulted in the accumulation of 40% starch per dry weight after 4 days. (2) Application of NaCl at concentrations of 50 mM or higher also resulted in accumulation of starch but the highest values (species-dependent between 10 and 45% starch) could be observed only after 7 days. (3) Depletion of phosphate, nitrate or sulphate in the growth media had similar effects to salt addition. In the absence of phosphate starch can accumulated to approximately 50% of dry mass in several species (*Spirodela intermedia, Landoltia punctata, Lemna aequinoctialis*) after 14 days. We suggest the following common molecular mechanism that underlies these observations: Stress factors commonly suppress growth more effectively than photosynthesis. The resulting surplus of carbohydrates that is not being used for growth is therefore stored as starch. This hypothesis has biotechnological relevance since this may be applied toward increasing starch accumulation in duckweed and thus could be used to optimize bioethanol production from this aquatic crop.

Controlling the clubroot disease of Brassica crops by increasing plant defense responses using the endophytic fungus *Acremonium alternatum*

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The clubroot pathogen *Plasmodiophora brassicae* infects economically important Brassica crops such as canola, but also the model plant *Arabidopsis thaliana*. Clubroot results in abnormally growing roots and restricts the flow of water and nutrients to the upper plant parts, thereby inducing wilting. Yield loss affects about half the percentage of infected plants. Due to its complex and well-adapted life cycle the pathogen is difficult to control by chemical and cultural means and therefore continues to spread around the globe. Infested fields can no longer be used effectively for cultivation of crop plants for at least the next ten years. Despite costly breeding of resistant cultivars, recent research leans towards alternative, low-impact and environmentally friendly methods to control clubroot. To this end we have identified the endophyte *Acremonium alternatum*, a known biological control agent in other countries, to show promising antagonistic effects in clubroot-infected *A. thaliana* and Chinese cabbage. The mechanism by which *A. alternatum* controls pathogens is not known so far. In clubroot-infected plants the fungus delays the development of *P. brassicae,* presumably by inducing resistance mechanisms of the host. We found several known resistance genes to be differentially expressed in this tripartite interaction, but not in roots with *P. brassicae* infection alone. Furthermore, we have conducted a microarray analysis to identify additional candidate genes. The long-term goal of this work is to contribute to a fundamental understanding of endophyte-plant interactions and an effective reduction of clubroot to be used in integrated pest management for canola and other cabbage varieties.

Keywords: *Arabidopsis thaliana*, *Brassica rapa*, *Brassica napus*, Defense gene induction, Microarray, *Plasmodiophora brassicae*

Scents of Survival: Volatiles and Plant Defense

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All plants are master chemists that are able to synthesize an arsenal of different compounds which efficiently defend against herbivore and pathogen attack. Their chemical weaponry ranges from highly active toxins to digestibility reducers, from specialized substances such as alkaloids and terpenoids to basic building blocks of life like proteins. In addition to those chemicals which directly affect herbivores, attacked plants can release characteristic bouquets of low molecular weight volatile organic compounds (VOCs) into their environment. Mostly, these volatiles areterpenes and fatty acid derivatives. They serve as signals which can attract predators and parasitoids to attack feeding herbivores, thus indirectly defending the plant that is under attack. In addition, volatiles may also be perceived by remote parts of the same plant, which can then prepare itself to defend against imminent attack, and thus react more quickly when necessary. Neighboring plants may benefit as well. This has been shown in mixed populations of *Artemisia tridentata* and *Nicotiana attenuata*. These natural phenomena suggest effective and sustainable strategies for agricultural pest management which are already being realized.Taking advantage of own results and of from the literature, selected examples for defense strategies, defensive compounds, volatiles and their collection and analysis will be presented. In addition, volatile-based approaches of plant defense in agriculture will be demonstrated and discussed.

Keywords: plant defense, herbivory, volatiles, indirect vs direct defense, pest management

Light signaling in plants

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Light signals have multiple profound effects on plant development. Signals perceived by phytochromes, the red/far red absorbing family of photoreceptors control the pattern of development throughout the plant's life. Germination of many plant species is regulated by phytochromes. On the other hand, germination and seedling development depend on degradation of storage materials. Starch and lipids are the main storage materials in plants. While glucose released from starch allows its straightforward utilization as an energy resource for the growing seedling, fatty acids (typically triacylglycerols) must be first converted into carbohydrates via the glyoxylate cycle. Fat degradation has been studied chiefly in oil-storing seeds. Information about the relationship between starch and lipid metabolism in seeds containing both types of storage material is very limited. In an ongoing study we investigate phytochrome control over germination and degradation of starch and lipids in seeds of tomato, *Lycopersicon esculentum*, an important dicotyledonous plant. Phytochrome-deficient mutants, *phyA*, *phyB1*, *phyB2*, *phyAB1*, *phyB1B2* and *phyAB1B2*, are used to identify the specific signaling pathways. Far red light inhibits tomato seed germination, while consecutive irradiation with red light overcomes this inhibition and induces germination. During the first five days of growth a decrease in lipid content and increases in starch and sucrose contents have been observed, pointing to *de novo* starch synthesis at the expense of lipids. Analysis of germination and metabolite content patterns in seeds subjected to different light treatments suggests that these processes are controlled independently. A significant difference between red- and far red-irradiated seedlings can be observed only in the case of starch content which points to a role of phytochromes in storage starch metabolism. Based on the results obtained to date, phyB2 is the main candidate for the starch metabolism controlling photoreceptor.

A different signaling pathway is involved in the control of chloroplast responses to light. These responses are widespread among photosynthetic organisms enabling them to optimize energy capture under limiting light conditions and to minimize photodamage in excess light. Chloroplasts move passively, driven by forces operating outside the organelles. They accumulate in weakly illuminated regions of the cell and avoid regions exposed to strong light. Both chloroplast responses are controlled only by blue light in the mesophyll of vascular land plants. Two UVA/blue-light receptors, phototropin1 and phototropin2, control the accumulation response, with the latter active at higher fluence rates. Phot2 alone controls the avoidance response. The signaling pathway beyond phototropins is largely unknown both at the level of signaling target(s) and mediating species: signal carriers and/or modulators. Analyses of various lines of chloroplast movement mutants resulted in the discovery of several proteins which appear to play important regulatory roles in the movement mechanism. Our current efforts concentrate on determining more exact roles of low molecular species acting as secondary messengers in the signal transduction: calcium ions and elements of the phosphoinositide (PI) system. The phototropin-induced PI metabolism is essential for other acclimation responses in plants, stomatal opening and phototropism. We have demonstrated the importance of PIs in chloroplast movements, with the phosphatidylinositol 4,5-bisphospahte-phospholipase C pathway involved in phot2 signaling while PI3-kinase and PI4-kinase are required for the phot1- and phot2-induced accumulation response. Our results suggest that these PIs modulate cytosolic Ca^{2+} signaling during movements.

Keywords: chloroplast movement, germination, phototropin, phytochrome, tomato seeds

The Shape of Trichomes, a Quantitative Trait Loci Mapping Approach

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Glandular trichomes are important "biofactories" for secondary metabolites with a wide range of functions in plant defense. There is a huge variety in the architecture between different types of trichomes and there are evenlarge morphological differences in the structure of type VI glandular trichomes in tomato. While wild tomato species like *Solanum habrochaites* LA1777 possess spherical trichome heads, the cultivated tomato *Solanum lycopersicum* exhibit a four-leaf clover shaped head. In both cases the head is made of four distinct cells. In the wild species, these head cells are separated by a cavityin the center, a feature missing in the cultivated lines.In order to investigate the genetic basis of these phenotypic differences we created a backcross population of LA1777 and *Solanum lycopersicum* WVA106. A formula for the scoring of the trichome head shape allows quantifying the trichome phenotype in the backcross lines. Thisreveals a continuous gradient between the shapes of the parental linesdefining the outer limit which indicates that the shape is a quantitative trait determined by multiple genes. By rough mapping the population using High-Resolution Melt Analysis based markers we were able to perform quantitative trait loci (QTL) analysis to identify genetic regions that are linked to the trichome morphology in tomato.

Here, we show that there are at least four independent QTLs on different chromosomes that are contributing to the shape of glandular type VI trichome heads in tomato.

Keywords: tomato, glandular trichomes, QTL mapping

The impact of source and sink capacities on tuber starch yield of potato

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Improving the yield of crop plants is an important goal in future biotechnological research. To improve potato tuber starch yield, we simultaneously increased both source and sink capacities. Source capacity was increased by two alternative approaches, (i) cytosolic overexpression of an *E. coli* pyrophosphatase in mesophyll cells and (ii) leaf-specific antisense repression of ADP-glucose pyrophosphorylase. Both approaches favor leaf sucrose synthesis over starch synthesis. However, without an enhanced demand of sink organs for sucrose, its transport via the phloem is not enhanced due to limited sink capacity. To overcome this limitation, an additional increase in sink capacity had to be engineered. To this end, we overexpressed two metabolite transporters in tuber amyloplasts, the pea glucose 6-phosphate / phosphate translocator GPT and the Arabidopsis adenylate translocator NTT1 which co-limit tuber starch formation in wild-type potato plants. This combination of 'push' and 'pull' approaches led to a doubling of tuber starch in triple-transgenic potato. Given the general nature of the approach, it might be successfully transferred to other crops in the future. On the other hand, impairing sink strength by down-regulation of GPT activity led to a penalty in tuber starch yield.

Keywords: biotechnology, source-sink interaction, yield increase

DNA barcoding for species identification in prepared fishery products

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Considering that seafood mislabeling has been widely reported throughout the world and that the authentication of food components is one of the key issues in food quality, the aim of this study was to use DNA barcoding to investigate the prevalence of mislabeling among fresh prepared fishery products from markets and supermarkets located in Apulia (SE Italy). The study reveals a high occurrence of species mislabeling (42%) in the prepared fillet products, further evidence of the need for increased traceability and assessment of the authenticity of food products. Given the increasing demand for transparency in the food industry and the enforcement of proper labeling have provided a driving force for the development of suitable analytical methodologies for species identification. There is therefore a great need to develop fast and reliable methods to identify meat species and to quantify their levels in seafood products, in order to ensure product quality and thus to protect consumers. The study provides further evidence that molecular investigations based on DNA barcoding may be one of the most powerful tools for the assessment of species identity, food traceability, safety and fraud.

Keywords: prepared fishery products, species identification, DNA barcoding

Detection of mislabeling in packaged chicken sausages by PCR

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Considering that the authentication of food contents is one of the most important issues for the food quality sector, this study investigates processed-meat products from Italian markets and supermarkets using the mitochondrial *cytochrome b* gene qualitative PCR identification system in order to verify any species substitution or mislabeling. The results revealed a high substitution rate among the packaged chicken sausages, highlighting a mislabeling rate of 54%, and consequently, considerable discordance with the indications on the labels, which raises significant food-safety and consumer-protection concerns. The study also revealed important management implications, suggesting the need for implementation of effective and accurate monitoring and tracking programs

Keywords: packaged chicken sausages, species identification, DNA barcoding

Occurrence of Norovirus and HAV in shellfish

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Norovirus and HAV are a common cause of gastroenteritis outbreaks associated with consumption of raw shellfish. The majority of Norovirusinfections worldwide are due to genogroup II noroviruses. Instead nowadays many study described a high prevalence of HAV subgenotype IB. 369 bivalve molluscs (294 mussels, 42 clams and 33 oysters) from several retail points and harvesting areas "A" in South Italy, North Italy and Butrinti Lagoon (Albania) were sampled between 2008-2013. All samples were screenedby a semi-nested RT-PCR specific forNoVsgenogroup II and by a nested RT-PCR for VP1/2A region of HAV. Norovirus RNA was detected in 10,5% of samples and ranged from 3% in 2008 to 85% in 2013. Instead Hepatitis RNA was detected in 32,5% of samples and ranged from 90% in 2008 to 3-1% in 2013. This study could contribute to develop new control strategies to reduce the risk of public health and also to monitor the epidemiology of the strains circulating in the field.

Keywords: Shellfish, HAV, Norovirus

Heavy metal tolerance of plants

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Few plant species, termed metallophytes, can grow on heavy metal soils. The metallophytes occurring in Central Europe belong to different taxonomic affiliations. Heavy metal tolerance of plants is thus a clear-cut example of convergence in biology. A separation between pseudometallophytes (plants that occur on heavy metal soils but also elsewhere) and strict metallophytes (only on heavy metal soils) does not make sense, since all metallophytes that are found naturally only on heavy metal heaps in the plains of Central Europe can be grown in non-polluted garden soils. A botanist can immediately recognize a site as being polluted by heavy metals by the occurrence of heavy metal plants. The adaptations of the metallophytes to the adverse conditions of heavy metal soils differ from one plant species to the next. There is no general tolerance of plants to heavy metals, and adaptation to a toxic concentration is heavy metal specific. Toxicity of heavy metals to plant cell constituents and responses of plant cells to cope with excess of heavy metals will be discussed. Heavy metals may affect plant cells by binding to functional SH-groups of enzymes or may generate reactive oxygen radicals that destroy cell constituents. Interactions with symbiotic microorganisms such as mycorrhizal fungi will only briefly be mentioned in the presentation. Current research on heavy metal tolerance and hyperaccumulation of plants focuses on the two model species *Cardaminopsis* (*Arabidopsis*) *halleri* and *Thlaspi caerulescens*. On the molecular level, heavy metal tolerance of plants might have arisen by gene duplications and modified regulations of their expressions rather than the development of new genes generated by extensive sequence alterations. The identification of gene regions that code for the tolerance against a heavy metal is currently in the centre of research in the field.

ZmpTAC12 is a Multifunctional ssDNA/RNA Binding Protein Essential for PEP-Complex Accumulation in Maize Plastids

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The plastid encoded polymerase (PEP) represents the major transcription machinery in mature chloroplasts. The assembly of this complex involves at least 16 subunits encoded by both nuclear and plastid genes. Depletion of single subunits is known to result in strongly diminished PEP activity causing severe defects in chloroplast biogenesis. We have characterized one subunit in maize, ZmpTAC12, and investigated the molecular basis underlying PEP-deficiency in *Zmptac12* mutants. We found that *Zmptac12* encodes two different isoforms, both of which localize dually to plastids and nuclei. Moreover, both variants assemble into the PEP-complex. Analyses of PEP-complex assembly in mutants lacking various PEP-complex components demonstrated that ZmpTAC12and other nuclear encoded subunits are required to accumulate the PEP-complex. RIP-Chip assays with pTAC12 antibodies identified a subset of plastid RNAs that are synthesized by PEP-dependent transcription. Gel mobility shift analyses with recombinant ZmpTAC12 revealed affinity to ssRNA and ssDNA sequences. Collectively these data demonstrate that ZmpTAC12 is required for the stable accumulation of the PEP-complex and that it interacts with single-stranded nucleic acids.

Specificity and mechanism of protein transport in plant cells

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Within the plant cell, a multitude of protein transport mechanisms and machineries are involved in the correct sorting of proteins into and within the respective target organelles. Of particular interest in this respect are chloroplasts and mitochondria, organelles of prokaryotic origin that are situated in a eukaryotic cellular environment. As a result of this former endosymbiotic situation, the organelles house unique sets of protein transport machineries. Among those are evolutionary young transport pathways, which are responsible for the import of the nuclear encoded proteins into the organelles, as well as ancient pathways operating, for example, in chloroplasts in the 'export' of proteins from the stroma (the former cyanobacterial cytosol) across the thylakoid membrane into the thylakoid lumen. The mechanism of such protein sorting and transport pathways are analysed in my group by different *in vitro* and *in vivo* systems.

Work in the lab focusses primarily on two topics. On the one hand, we are interested in the specificity of protein sorting between mitochondria and chloroplasts which is a unique challenge of plant cells due to the presence of two endosymbiotic organelles. In the past years, an increasing number of nuclear encoded proteins has been identified that are not imported into a single class of organelle only but which show *dual targeting* into both endosymbiotic organelles.

The second main topic of interest concerns the unique mechanism of membrane transport by the *Twin arginine translocation (Tat*) pathway which operates both at the thylakoid membrane of chloroplasts and at the cytoplasmic membrane of bacteria. Probably the most remarkable feature of this transport pathway is its property to translocate folded proteins across ion-tight membranes.

Recent data on the analysis of either of these protein targeting mechanisms will be presented.

Coloration in floral tissues of *Oncidium* cultivar

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Flower pigments. Composed of carotenoids, flavonoids and betalains, are responsible for the natural attractive display of plant colors. Of the three pigments, anthocyanins of the flavonoid family have the broadest distribution in the flowering plants and display the versatile coloration from pale yellow to blue color hue. The biosynthetic pathway has been well characterized, and they are eventually accumulated in the vacuoles of epidermal cell and are responsible for color appearance. Carotenoids are essential components for photosynthetic organisms, in which they provide photoprotection. In higher plants, carotenoids fulfill an additional important purpose as colorants of flower and fruit. They accumulate in chromoplast and display bright yellow, red or orange colors.

Oncidium Gower Ramsey hybrid is a popular cut flower in Asian floral market. Due to the muti-crossing in past breeding program, the hybrid organism has lost its fertility. Therefore, no more color variations are generated In the progeny. In our purpose to generate novel Oncidium cultivars with new pigmentation, The pigment components in floral tissue were intensively analyzed. Our results revealed that the anthocyanins pigments restricted in seal, petal and lip crest tissues are composed of cyanidine, peonidine and delphinidine derivatives. On the other hand, the large area of lip tissues accumulates violaxanthin, 9-cis-violavanthin, neoxanthin and a little ß-carotene. The differential regulation of key genes to determine the color pattern was also investigated in our past work.

To alter the floral coloration, we employed RNA interference-based gene silencing of several carotenoid-biosynthetic genes such as phytoene synthase, phytoene desaturase and ß-hydroxylase to engineer carotenoid metabolites. The carotenoid content was found decreased in several RNAi transgenic Oncidium lines, and the floral color was successfully changed. However, the side effects of carotenoid-deficiency in several transgenic orchids show varied phenotypes under 35S promoter-driven expression. In conclusion, the multiple function of carotenoids in plant growth and development is attracting us to further investigate.

Agriculture in the treetop: fungus cultivation by *Azteca* ants living in *Cecropia* trees

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The *Azteca* sp./*Cecropia* sp.association from the Neotropics is a textbook example for myrmecophytism, the obligate living-together of ants and plants. Myrmecophytic *Cecropia* plants provide shelter in their hollow stem and glycogen rich food bodies called" Müllerian bodies" for the resident ant colony. In return, the ants of the genus *Azteca* aggressively defend their host plant against herbivores, encroaching vegetation and pathogens. Though the *Azteca* sp./*Cecropia* sp association is known for a long time, we discovered only recently an additional partner. The ants frequently cultivate ascomycete fungi of the poorly known order Chaetothyriales(Ascomycota) inside the *Cecropia* stem. Two different kinds of patches with hyphae were observed: patches that are regular refuse piles with nematodes and diptera larvae in addition to fungal hyphae, and patches from tissue scratched from the internode walls which lack nematodes and dipteran larvae but are pervaded with fungal hyphae. Colony founding queens in the claustral phase already form small fungus infected pellets from scratched wall tissue before laying eggs. Fungal strains were isolated from live and from silica gel dried fungal patches and their identity was determined with molecular methods. Only six closely related fungal genotypes were found in 42 plant individuals belonging to four different *Cecropia* species associated with five different *Azteca* ant species, and from different geographic region,. This suggests that the founding queens carry hyphae parts or spores from their mother colony to the new one.We will propose some hypothesis regarding the function of the fungi in this ant/plant system.

Keywords. Ascomycota, Chaetothyriales, myrmecophyte, fungal patches

Angiogenesis – the most important regulatory event for bovine ovary function

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Angiogenesis, the development of the new capillaries by endothelial cell proliferation and outgrowth from pre-existing vessels, is one of the prominent features of follicle finale development and corpus luteum (CL) formation and function. Of the numerous promoters of angiogenesis that have been identified, the most important factors appear to be vascular endothelial growth factor (VEGF), angiopoietin (ANPT) and hypoxia-inducible factor (HIF) family members. The aim of this study was to characterize the expression patterns of these angiogenic family members in the bovine ovary during different physiological stages. Experiment 1: antral follicles were classified according to size and estradiol-17beta concentration in the follicular fluid (FF) into 5 groups (<0.5, 0.5-5, 5-40, 40-180 and >180 ng/ml). Experiment 2: CL were assigned to the following stages: days 1-2, 3-4, 5-7, 8-12, 13-16, >18 of the estrous cycle. The expression of mRNA was measured by RT-qPCR, hormone concentrations by ELISA and localization by IHC (Immunohistochemistry). The results of examined factors during follicle development and CL formation and function are discussed with the literature available for large domestic animals and especially for bovine system. The highest expression for VEGF, ANPT2/ANPT1, and HIF-1alpha were found during finale follicle maturation and in CL during the early luteal phase (days 1–4) followed by a significant decrease afterwards. In conclusion, the results obtained led to the assumption that the examined factors are involved in the local mechanisms regulating angiogenesis as the most important regulatory event for follicle development and for CL formation and function in cow.

Keywords: Angiogenesis, angiogenic factors, expression, Ovarian follicles, *Corpus luteum*, Bovine

Genetic diversity of Albanian goat breeds estimated by molecular markers

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Goats are one of the most important livestock species in Albania. The aim of this study is evaluation of genetic diversity, genetic structure and genetic distances between six Albanian local goat breeds, using three set of markers: 31 microsatellite markers, AFLP markers based on three primer combinations, and 26 SNP markers. A total of 185 individuals representing six different Albanian goat breeds (Capore, Muzhake, Dukati, Liqenasi, Hasi and Mati) were analyzed. All microsatellite markers were highly polymorphic. A total number of 331 alleles were observed at 30 microsatellite loci. The average observed heterozygosity was 0.673. The global heterozygosity deficit (F_{IT}) was estimated 0.11 and global breed differentiation evaluated by F_{ST}, was estimated 0.02. The AMOVA revealed that percentage of variation among populations was 2.04% and within populations was 97.96%. AFLP analysis using three primer combinations revealed 107 polymorphic markers. The F_{ST} value across all markers was 0.031, indicating that 3.1% of total genetic variation is due to breed differentiation. SNPs analysis indicated: Expected heterozygosity per locus ranged from 0.0059 to 0.526 with an average value for all loci, 0.316, while the values of observed heterozygosity (Ho) ranged from 0.0059 to 0.517, with an average value of 0.282. The results obtained here reflect gaot management in Albania. Based on the results of this study, we may conclude that Albanian goat breed are important reservoir of genetic diversity, have a low level of differentiation and high level of admixture.

Keywords: goat, Microsatellite, AFLP, SNP, heterozygosity, genetic diversity, genetic distance

Heavy metals in the raw milk in Mitrovica

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Safe and quality of food are of primary importance for food industry. The aim of this study was to measure the heavy metals concentration in the raw milk in Mitrovica, a region with a rapid industrial development. Trepca complex, for example is one of the key sources of heavy metal contamination of the region. The purpose of this paper, initially, was to understand the role of food contaminants that until recently were considered as antidote for heavy metals. Samples were prepared in the oven combustion and the remained calyx was treated with nitric acid. Samples were analysed at the atomic absorber and the concentrations of three heavy metals in milk were measured. The results demonstrate that the milk from this area was contaminated with Pb and the highest concentration of this heavy metal was detected during the summer (L_V = 2,048 mg/l). The concentration of Zn, one of the essential metals in milk, was reduced to Z_D = 0.1506 mg/l during winter time. The concentration of Cd, a toxic heavy metal, resulted to be high in all areas, reaching the highest level (B_V= 0.1152) in summer.

Keywords: milk, heavy metal, toxicity

The effect of combined preparation, probiotic and phytase on performance parameters and vitality of weaned piglets

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A combined preparation with probiotic Schaumalac F 80M BONVITAL 4b 1841 (2,5 x 10^{10} KBE *Enterococcus faecium* DSM 7134) and phytase was supplemented to a basal ration with 4%. The effects on growth performance on thirty five weaned piglets were studied for thirty days experimental period. The supplementation of combined preparation improved slightly daily weight gain (DWG), feed consumption (FC) and feed conversion ratio (FCR), kg feed/kg weight gain. At the end of experimental period, daily weight gain was increased 6% more and feed conversion ratio was decreased 3.4%, compared to the control group or without supplementation. The results indicate that the combined preparation may be less suppressive to the *Escherichia coli.* Overall a positive effect of the probiotic and phytase on growth performance was observed.

Keywords: combined preparation, probiotic, performance parameters

Hyperlipidemia, a potential risk for cardiovascular diseases in the population of Elbasan

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Hyperlipidemia is a major risk factor for atherosclerosis and cardiovascular disease. Hyperlipidemia is usually asymptomatic until serum lipid levels are severely elevated, and cardiovascular morbidity and mortality are increased. In this study we have analyzed the role of hyperlipidemia in atherosclerosis and cardiovascular diseases and links between high levels of lipid profile and the habit of smoking, family history with dislipidemia, diabetes, obesity. A sample population consisting of 500 persons from Elbasan district, selected at random, was taken into examination. They were examined about blood analyses for the level of: triglycerides, total cholesterol, HDL-cholesterol and LDL-cholesterol. The analysis of contingent tables and the determination of Hi squares is used to see the potential between variables. The risk of cardiovascular disease increases by reducing the level of HDL-cholesterol. The person suffering from the diabetes, or who had a family history with hyperlipidemia are more likely to be affected by the cardiovascular disease. Men (234.3 mg/dl ± 120.2), are characterized by higher tryglicerides values than Women (210.8 mg/dl ± 102.4) therefore are more rescued from cardiovascular disease. Between level of HDL-cholesterol and gender has a high association (Hi square = 30,567 df = 1). Increased triglycerides level is associated with reduced levels of HDL-cholesterol and increases the level of total cholesterol. The value of Hi square are respectively: 4.963 and 6.053 (df = 1).

Keywords: atherosclerosis, heart attack, HDL-cholesterol, LDL-cholesterol, family history

Biomass and dry matter yield, physiological growth indices in some maize hybrids

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Biomass and dry matter of maize production per units' area in full correlation to the: maize hybrids (MH), agro-ecological condition (AEC) during growth seasons and farming system of cultivation (FSC). Information on silage maize yield and quality can help silage growers and users choose hybrids that best fit their needs. The aim of this study was to determine biomass and dry matter yield, physiological growth indices, for different maize hybrids in suitable agro-ecological conditions of Kosovo. A hybrid selection for a specific location, suitable for the agro-ecological condition is one of the essential principles for improving maize production for silage or for grain. In order to determine biomass and dry matter yield per hectare, and growth rate for different MH, it was set up a field trial on randomized complete block design (RCDB), with three replications, with 6 MH: BC38W, BC408, ZP434, NSSC444, ESP500 and LUCE, during the 2010 and 2011 (Y), at didactic experimental farm, located in geographical position: N 42º38'97 "and E 21º08'45" and 570 MASL. The biomass and dry matter yield, and physiological growth rate were conducted according to the formula: (MH-6 x Y-2 x P4 x R3) =144 combinations. Means results for investigated parameters were: Absolute growth rate (AGRμ = 5. 43), crop growth rate (CGRμ = 30,98), total maize biomass (TMBμ = 585.39 g plant^{-1}) and total dry matter (TDMμ = 22.52MT hectar^{-1}). The obtained results were with wide range variability and high significant differences between hybrids and years on the level P 0.05 and P 0.01.

Keywords: Maize hybrid, biomass, dray matter, growth rate, yield

Quality of RTE-meat products in Tirana

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The foodborne diseases place an important rol for public health, because they cause not only infection to constumers, but they also cause considerable economic problems. In this study we have tested three RTE meat product categories: salami with termic preparation –RTE, salami with fermentation process –RTE, sliced packed meat products. A total of 120 samples were analysed, during 10 months period, from which 60 samples collected to establishments implemented the HACCP system, 60 other samples to establishments implemented GMP. The microbiological quality, the hygiene of process and product, was based on the determination of the number of *E. coli* and also the presence or the absence of Salmonela spp. The RTE products hygiene estimated from the level of *E. coli* was resulted in satisfactory levels, whithout the presence of *E. coli* in 108 samples or 90% of the total, but in 12 samples or 10% of them *E. coli* was isolated at level 16 cfu/g to 70 cfu/g. The product with the highest level was sliced salami. Refer to the implemented system from establishments, HACCP or GMP, 7.5% of pozitive *E. coli* samples, belongs to subjects that implemented Good Manufacture Practise, 2.5% others belongs to establishment with HACCP system. *Salmonela spp.* was not determinated. This study showed the importance of HACCP implementation system in food proccesing industry, in aim to get safe ready to eat meat products.

Keywords: RTE meat products, microbiological quality, *E. Coli, Salmonella spp,* HACCP, GMP system

Albanian consumer's perception towards animal welfare

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This study is the result of subsequent of previous survey conducted by the author regarding animal welfare during transportation and destined for meat consumption or to be breed for milk. The strategy of European Union for Animal Protection and Welfare 2012-2015 focusing on animal's breed for economic purposes aims to increase or guarantee animal welfare during breeding, transportation and to the butchery. Thus, its purpose is to guarantee the welfare of agricultural and domestic animals, whose final destination is the consumption of their meat in all chains until they get to the ultimate consumer. The purpose of this study is to assess the level of knowledge that consumers have in relation to animal welfare as well as their perception on the current situation of animal welfare in Albania. At the same time, the results of this survey will also serve as indicators to give its contribution to the strategy for increasing consumer's level of awareness on animal welfare and the impact of animal welfare on human life. The process of interviweing was realised with 166 occasional people belonging to different ages, different educational levels who are rezidents in different areas of Albania, so that the survey can be as representative as possible. Based on the analyses of the responses given by the interviewed results that the Albanian consumer is partially informed and the rest of them uninformed. What is worth mentioning here is the fact that mostly of the interviewed are really concerned about animal welfare during breeding, transportation and butchery's conditions.

Keywords*:* Animal welfare, consumer health, animal health, stress of transport, transport of animal

A study of the somatic cell count of Kosovo bulk milk farm management and perspective

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The aim of this study was to determine the effects of the somatic cell count (SCC) in bulk milk farm management and its commercial perspective according to the milk quality standards in Kosovo. A 2069 raw bulk milk samples were taken from a milk collection points in four regions of Kosovo, with two months visits throughout a year. All samples were analyzed by using "FossomaticMinor" equipment, while for the results obtained and identification of different variables effect of SCC on raw bulk milk a general linear model was used. The effect of all variables was considered as a fixed. The overall results show that herd, region, and month of the year ($P<0.0001$), respectively, had a significant effect on the presence of SCC. Based on the country existing milk standards for raw milk, the results gained show about 29.6% belong to extra class milk (SCC/mL<300.000), followed by milk quality class III^{d}, Ist and II^{d}, 24.3%, 8.5%, 8.2% (SCC/mL >300.00 - <600.000), respectively. Of concern is the fact that about 29.5% of total bulk milk analyzed tend to be out of milk quality standards, poor quality ((SCC/mL >600.000). The overall mean of SCC on milk was high 772.475 per mL milk, indicating negative farm profit correlation, poor animal health and food safety. The result obtained can be used for assessing raw milk quality and controlling herd management programs.

Keywords: raw milk, milk quality, standards, variables, general linear model

The mycotoxins in foods from livestock origin and consumption risks

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During daily life, foodstuffs destined for animal are contaminated at different scales, by their mold, spores and their mycotoxins. The dangerous mycotoxins are; aflatoxin, okra toxins, zearalenons, T-2 toxin, fumonisins. These mycotoxins passing from livestock, through their products like milk and milk products. When the food oflivestock has not airing humidity, begins mold to grow and they emit mycotoxins. Aim of study: Identification of aflatoxin in the products from animal origin. The damages they cause and awareness of local institutions and consumers. Methodology, sampling the unpasteurized milk and their products like cheese, yogurt, butter were taken and were treated with immunological methods like ELISA test. Where is defined the amount of aflatoxin. Are also obtained samples of livestock food for aflatoxin identification. Results: Identification of aflatoxin in animal feeding is done in two periods, from February to April and in the second phase from September to October 2013. According to the results in some food samples we found aflatoxin 25.30 μg/kg, which is higher than the rate that is allowed 20 μg/kg. While the the average contaminated concetrate is 6 times over average. Whereas at samples taken in maize contamination by mycotoxins is 7 times higher than permissible norms. Conclusion: Based on data found, livestock nutrition is a critical factor, affecting the aflatoxins residues in fresh milk and its products. And the samples taken in February-April have resulted in higher residues of aflatoxin.

Keywords: food, Aflatoxins, Livestock

Aflatoxin residues in milk and the effects on public health

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Aflatoxin is produced by *Aspergillus flavis* and *Aspergillus parasiticus*. The residue of this mycotoxin on food is dangerous for public health. So, routine control of food if they have toxic residues is very important. Especially, on milk products. Mycotoxins reproduce in favorable conditions like high temperature and humidity. The negative effects of food with mold, was discovered in China before 5000 years. Toxins formed from mold, seriosly began to study fifty years ago. Aim of study;purpose of this work is related with the research of toxic waste such as aflatoxins in milk, its products and animal feed Methodology; A validated analytical methods are used for the analysis of aflatoxin in milk products. We used the Premi test and Elisa for detection of aflatoxin B1 and M1. Results; Totally 122 samples have been tested, for the presence of aflatoxin. Presence above of limits of aflatoxin on milk we found on 27 samples or 22,13%, while 95 samples or 77.87% we found no trace of aflatoxin. Conclusion; For health and consumer protection, it is essential to keepamount of residue of aflatoxin in food products as lower as possible, the normal values have been set by EU standards.

Keywords: aflatoxin, milk, food, public health

Eco-Physiologic studies an important tool for the adaptation of forestry to global changes

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Forests are the dominant land use in Albania, occupying almost 1. 5 million hectares (Proko 2011), but c. a. 70% of the forest area belong coppices and shrub forests, as the results of unsustainable practices, intensive cutting and overgrazing. Forest ecosystems serve many ecological roles, including regulation of the planet's carbon and water cycles. Forests are also important components of economic systems. Research in the Forest Ecophysiology studies on the Faculty of Forestry Sciences is intended to produce biological knowledge that can be used to better manage forest resources for sustainable production of economic and non-economic values and aims to improve the understanding of past and current dynamics of Mediterranean and temperate forests. The overarching goal is to quantify the influence of genetics, climate, environmental stresses, and forest management inputs on forest productivity and carbon sequestration, and to understand the physiological mechanisms underlying these responses. Process-based models open the way to useful predictions of the future growth rate of forests and provide a means of assessing the probable effects of variations in climate and management on forest productivity. As such they have the potential to overcome the limitations of conventional forest growth and yield models. This paper discusses the basic physiological processes that determine the growth of plants, the way they are affected by environmental factors and how we can improve processes that are well-understood such as growth from leaf to stand level and productivity. The study trays to show a clear relationship between temperature and water relations and other factors affecting forest plant germination and growth that are often looked at separately. This integrated approach will provide the most comprehensive source for process-based modelling, which is valuable to ecologists, plant physiologists, forest planners and environmental scientists (Landsberg & Sands 2010). Actually the Albanian vegetation is presented in two different appearances: on one hand the existence of the virgin forests, generally located far from dwelling centres, because the lack of the infrastructure and; on the other hand the existence of degraded forests, located near dwelling centres because of intensive harvesting, abusive cutting and growing. By the consequences the degraded ecosystems are under an ecological stress and their rehabilitation is very difficult. To develop low cost methodologies for improving vegetation which will result in functional ecosystems in far degraded Mediterranean areas by means of physiological studies is very important and a new scientific field in Albanian forestry. The study is focused on seed germination physiology and seedling stress selection of some native evergreen and broadleaves oak species in order to determine the seed germination dependency on temperature and humidity, methods releasing germination beanies in species candidate for improving vegetation, the sensitivity of the germinating seeds and the seedlings on extreme temperatures, and the selection of drought and cold resistant seedling among populations of different geographical origin.

Keywords: Ecophysiology, forestry adaptation, regeneration, ecological stress, oaks

Evaluation scheme for *Blatta orientalis* and *Blattella germanica* in food units with HACCP implementation

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Blattella germanica and *Blatta orientalis* are the most common insects found in food industry, houses, offices, hotels, schools, etc. The aim of this study is to evaluate the efficiency of 2.15% imidacloprid gel baits for *Blatta orientalis* and *Blattella germanica* control in Albanian food units. The study was carried out in Tirana from June 2012 to June 2013 in 14 infested supermarkets, 13 of which were treated with 2.15% imidacloprid while 1 served as control unit. Monitor traps and visual inspection were used to estimate pre and post-treatment insect's density. The latter in treated units was reduced compared to the control unit. There was a decrease since the 1st week while the total elimination was achieved by the end of week 9. The obtained results indicate that 2.15% imidacloprid gel baits are more efficient to eliminate *Blattella germanica* and *Blatta orientalis*. However, these results contradict the fact that dust and spray insecticides are more effective. On the other hand, gel baits are considered a valuable choice in Albania also for the control and eradication of *Blattella germanica* and *Blatta orientalis* from infested area. It is regarded safe for humans and the environment compared to spray or dust insecticides.

Keywords: Blatella, gel baits, insecticide, imidacloprid, HACCP

Feed-bank technology as dry season feed intervention for small ruminant production in Nigeria

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In Nigeria, small ruminants are faced with challenge of adequate and quality forage availability especially in dry season. However, in wet season, forages are available in quantity and quality, hence; they can be conserved and stored as feed-bank for later use in dearthperiods. Feed-bank is handy, easy to make, prevent feed wastage and selection. Three feed-banks: Gliricidia-Based (GB), Cassava-Top Based (CTB) and GB/CTB mixture (ratio 3:4) were produced from forages using standard procedures, analysed for chemical composition and offered to sheep and goats for acceptability using Coefficient of Preference (CoP) procedure. Total gas, Metabolisable Energy (ME) and Organic Matter Digestibility (OMD) of feed-blocks were assessed using *in-vitro* fermentation techniques. It was found that crude protein ranged between 15.3 and 20.1%, ether extract: 10.0 and 13% in CTB and GB/CTB respectively, significant differences existed. Also, acid detergent fibreand lignin followed similar trend. Feed-banks were accepted by small ruminants with CoP between 0.7 and 1.2 with higher preference for CTB. Total gas ranged between 30.7 and 34.7 ml for GB and GB/CTB respectively. The ME ranged from 5.35 (GB) to 5.36 MJ/Kg (GB/CTB) with no significant differences among treatments. The OMD ranged between 37.1 (CTB) and 50.3% (GB/CTB) and varied significantly among treatments. The feed-banks developed were observed to be adequate for small ruminant production; however, the cassava-top based was the most preferred by sheep and goats.

Keywords: Feed-bank, chemical composition, coefficient of preference, in-vitro fermentation, small ruminants

Risk assessment of poultry slaughterhouses in Albania

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The aim of this study is to assess the risk of poultry slaughterhouses in order to achieve a better official inspections. Study is taking place in 5 poultry slaughterhouses in Albania. The study was conducted through two tasks: poultry slaughterhouses classification related to the risk assessment based on the characteristics of the plant, product characteristics, production, hygiene processes, self- control plan (Sistem of Hazard analysis and critical control points), and on the identification of presence of *Salmonella* spp in the slaughterhouse environment and in the final product. In every slaughterhouse, inspections are performed every 3 months, by completing the appropriate checklist using point's evaluation. The results show that 5 slaughterhouses resulted in high risk (over 42 points). The detection of *Salmonella spp* in poultry carcasses, is based on ISO 6579 : 2002 method. 25 meat samples were analyzed in total where, out of which only one sample resulted with the presence of *Salmonella spp* in 10 gr. These results are due to an inappropriate Hygienic Practice, Manufacturing Practice and show that HACCP is not implemented rigorously.

Keyword: risk, assessment, slaughterhouse, *Salmonella spp*, meat sample

Biotechnology of nut trees development in Drin's valley, Albania

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A powerful plant with special, botanical characteristics and a longevity over 300 years, specific in Drini i Zi's valley. The treatment of rooting system that is related to terrene's factors in the pond of Drin river. Chemical treatment of "Juglandine" and the damage that it causes in other types of plants such as: apple tree ect. The study of "mikoriza" rooting system and earth conditions of its spread. The influence of climatic changes and the precautions that are taken to adapt these plants; climatic profile of Drin's valley, the tendence of changes and expectations. It is treated the problem of heterogamy, the role of late frost in this region, the graphic of temperatures' spread in last ten years. The role of crusified pollination in nuts' breeding, as we have to do with a valley zone. It is treated the cultivation's biotechnology; difficult reasons of breeding in natural way, because of phenol. This is the main reason that we want to develop the technology of artificial sapling. Growth through vegetative breeding, the use of new grafting technology. We treat a new way of graft, the time of isolation, the way of treatment after grafting until the laying. The species that are used in graft, the specification of some special qualities that make irreplaceable the organic connection between them. Phytosanitary protection in adaption with climate that species require. The graphic of spread and recomandation of new zones that will be analyzed by us. Chemical analysis and alluvial lands. The process "katena" which is treated in adaption with configuration of rocks in Drin's valley. Tabular data about mature lands, that are recomanded to be cultivated with nut trees in this region.

Keywords: biotechnology, treatment, breeding, adaption, chemical

The concentration and frequency of *C. sakazakii* in Queen Geraldine Hospital in Tirana

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In the last years the International Commission for Microbiological Specification for Foods has ranked *Cronobacter sakazakii* as "Severe hazard for restricted populations, life threatening or substantial chronic sequelae or long duration" (ICMSF, 2002). The objective of this study was to control the biological risk of the hospital kitchen`s environment at the University Hospital of Obstetrics and Gynaecology "Queen Geraldin" and where the powered infant formula is prepared. Efficiency measures to maintain control of the risk must be verified through the application of microbiological monitoring plan that provides application of microbiological environmental criteria, proper cleaning of equipments used in production lines, control of the final product during their shelf live, collection of samples from the raw material, surfaces and environment samples as well as control measures during preparation and reconstitution of powered infant formulae. This study was conducted to determine the concentration and frequency distribution of *C. sakazakii*. The samples (40 environmental samples and 20 hand swabs were collected from the hospital kitchen. Between strains was revealed the recovery of *C. sakazakii* in two environmental samples (3%). Rules that must be followed to ensure the highest level of microbiological safety in hospital/nursery are defined in MRA Series 10 (FAO/WHO 2004).

Keywords: PIF, Enterobacter sakazakii (*Cronobacter sakazakii*), food safety

Oxytropis tomorensis (Fabaceae) a new species from Tomori Mt, Albania

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Oxytropis tomorensis Kit Tan and Shuka is described as new species to science and illustrated. It was recorded in the limestone ridge of Tomori Mt, located in southwest Albania. The species belongs to section *Orobia* and its closest relatives are *O. korabenis* F.K. Meyer, *O. prenja* (G. Back) G. Back, and *O. argentata* (Pall.) Pers. *O. tomorensis* clearly differ from them by the habit, and morphological characters like semi-bilocular legume with well developed dorsal septum, indumentum and size of leaves and leaflets, and 1-veined stipules. The distribution of Albanian *Oxytropis* taxa is mapped too.

Keywords: *Oxytropis tomorensis,* taxonomy, threatened status, *O. korabensis*, *O. prenja* Tomori Mt, Albania

Heritability and genotypic correlations of same dry bean quantitative traits

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Dry bean is considered a staple cop in comparison with other leguminous crops in Albania. Some 15-17 thousand hectares are cultivated with crop each year in Albania, ranking this country among the main growers in Europe with regard to land acreage per capita. Most of dry bean cultivars cultivated in Albania are landraces with long life cycle and stable yields. Nevertheless these cultivars revealed yield fluctuations due to stresses caused by environmental changes in the last twenty years. Overcoming yield shortages has been the focus of a breeding program aiming at breeding new half determinant cultivars adaptable to earlier sowing dates, and with improved yield components such as number of pods per plant, number of beans per pod. 1000 beans weight, etc. This objective was achieved through a classical breeding program in which five dry beans landraces and introduced cultivars were crossed with each other. Final data were used to calculate crossing ability among these populations, genetic heritability, and genotypic correlations of some quantitative traits. These results may serve to improve the bean yielding capacity via classical breeding methods.

Serum enzyme and hepatic changes in sheep infested with *Fasciola hepatica*

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Fasciola hepatica, also known as sheep liver fluke is a parasitic flatworm of the class Trematoda, phylum Platyhelminthes that infects liver of various mammals, including humans. Fasciolosis is a parasitic disease of sheep caused by *Fasciola hepatica*. It has a worldwide distribution and it causes significant morbidity, mortality, liver damage and loss of weight. This study provides evidence for the presence of the parasite in the liver of sheep and biochemical values for 26 sheep samples which have been infested naturally from *Fasciola hepatica* parasite. Infestation was perceived throughout liver's macroscopic examination in slaughterhouses and microscopic examination too. From 224 sheep examined, 26 of them resulted infested by *Fasciola hepatica*. Biochemical indicators analysed in this study are alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, γ-glutamyl transferase and lactate dehydrogenase. Results have shown different values compared with the references but significantly higher changes have resulted in lactate dehydrogenase values (842.26 U/I).

Keywords: sheep, *F. hepatica,* biochemical value

Determination of Imidacloprid residues on tomatoes by High-Performance Liquid Chromatography

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A simple method for the determination of imidacloprid residues in tomatoes, grown in greenhouses, has been developed. Two procedures for extraction (acetone/ethyl acetate; acetonitrile/methanol) of the analyte from the sample matrix are suggested. Glass wool and Florisil column chromatography were used for purification of sample solution. The technique used for detection was Liquid Chromatography equipped with UV detector. LCMS was used as a confirmatory method. The recoveries ranged from 87.5-89.1% for acetone/ethyl acetate extraction and from 92.4-95.8% for acetonitrile/methanol extraction. Tomatoes treated with imidacloprid using commercial insecticide formulation - Confidor were analyzed using both procedures. There are differences between the test results obtained by the two procedures at 5% significance level. The acetonitrile/methanol extraction is recommended for use at determination of imidacloprid in tomatoes.

Keywords: HPLC analysis, imidacloprid, tomato, pesticide residues

Propagation of Kiwi fruit from green cuttings under greenhouse conditions

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In our country Kiwi has been imported from France during the 1970s , a period that coincides with its cultivation in the Republic of Macedonia and in other regional countries especially in the ex-republics of Yugoslavia. The first saplings were placed in a national nursery in Lushnja and according to the researchers of that period this plant had adapted well to the conditions, giving high experimental results. In the Albanian market, the Kiwifruit was introduced after the year 1991, with imported products from Greece and Italy. While in 1994 the first kiwi seedlings imported from Montenegro were planted in Balldre-Lezhe. To scientifically conduct the production of the Kiwi seedlings from vegetative rootstocks, specialists from the University of Agriculture and farmers in Lezha District conducted different rooting tests in greenhouses with controlled temperatures and an atomization irrigation system. The plantings were conducted at the beginning of every month starting from May till October. The experiment was conceived in 7 variants and 3 repetitions, while planting 150 vegetative rootstock/variant or approximately 1200 vegetative rootstocks in total. The testing variant was planted without any kind of stimulation. At the end of the experiment it resulted that the best rooting was achieved from planting vegetative rootstocks during the months of May, June, September while the worst rooting was during the period of July, August and October. The optimal percentage of IBA Crystalline is 2500 and 3000 ppm and IBA talc is 2000 ppm.

Keywords: vegetative rootstocks, variant, repetition, spry irrigation system, phytohormones, IBA talc, IBA crystalline

Mature leaf features of wild grapevine: populations grown in three different River Valleys of North Albania

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Wild grapevine (*Vitis vinifera* L. ssp. *sylvestris* (Gmelin) Hegi) is one of the most ancient and disseminated species in the riverbanks, forests and villages of the Northern Albania. An ampelographic and ampelometric study of the mature leaf characters was carried out during 2009-2013 in three wild grapevines populations, located in three river basins. Individuals of the wild grapevines populations belonging to the Mati River Valley, the lower part of Drini Valley and Shkreli Valley, were compared by means of mature leaf characters, using IPGRI, OIV and UPOV ampelographic methods. There was found that from twenty-one observed, measured and evaluated mature leaf characters, sixteen of them did not show any significant differences between three wild grapevine populations, while for five characters, such as size of blade (length of N1 and length of petiole), number of lobes, length of tooth N2, ratio length/width of tooth N2, and leaf angle between N1 and N3 showed significant differences. The highest value for the size of blade was measured in Drini Valley wild grapevine population, followed by Mati Valley population, while Shkreli Valley wild population showed the lowest size of blade. The same results were observed for length of tooth N2 and the ratio length/width of tooth N2. There was observed an inverse correlation between the size of blade and the angle between N1 and N3 measured at the first ramification. The highest value was measured for Shkreli Valley, while the lowest value was measured for Drini Valley wild grapevine population.

Keywords: wild grapevine, leaf characters, population, Drini Valley, Mati Valley, Shkreli Valley

Preliminary results of sero-conversion of kids and lambs vaccinated with *Brucella melitensis* Rev -1 strain

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Sheep and goat brucellosis is an endemic and most important infectious disease of livestock in Albania. It continues to remain a frequent zoonotic disease and an important public health issue. Among available strategies, mass vaccination is an acceptable, cost effective approach, and is a widely used strategy in many countries including some neighbouring Balkan countries. Albanian veterinary services supported by the European Union-funded PAZA project (Protection Against Zoonotic diseases, Albania) applied two successive annual mass vaccination campaigns that aimed to vaccinate all small ruminants in the country. These two campaigns aimed at significantly reducing disease spread, however, a small number of infection foci could remain and persist in some parts of country. Post-vaccination surveillance is essential for early detection and proper control of cases of brucellosis that might re-emerge. Limitation major complication arising from mass vaccination is the difficulty of interpretation of the results of serological tests conducted to diagnose the disease. **The aim** of this study was to evaluate the proportion of vaccinated animals that showed sero-conversion and the duration of detectable levels of agglutinins (antibody) against brucellosis in vaccinated animals. In total, 69 individual animals, 23 lambs and 46 kids aged from 4 to 7 months, were sampled at monthly intervals. Jugular blood was collected before vaccination and at intervals thereafter and tested by means of the Rose Bengal test. All animals were serologically negative before vaccination with modified live *Brucella melitensis* Rev.1 strain vaccine. Rose Bengal test was performed before vaccination, 18 days, 2, 3 and 4 months after vaccination. Eighteen days after vaccination, 63 out of 69 animals (91.3%) 82.6% of lambs (19 out of 23 lambs) and 95.6% of goat kids (44 out of 46) showed strong sero-conversion in Rose Bengal test. The proportion of positive vaccinated animals decrease progressively over time, and 4 months after vaccination all lambs were sero-negative; only one kid remain weakly sero-positive in RB test. Sero-conversion rate in young small ruminants, vaccinated against *Brucella melitensis* was within protective herd immunity limits. RB test could be used, with high confidence, for brucellosis surveillance four months after vaccination with *Brucella melitensis* Rev.1 strain vaccine administered intraconjunctivally in animal between 3 and 7 months of age.

Keywords: Zoonoses, vaccination, disease control, surveillance, agglutinins

Distribution of picophytoplankton along coastal water of Adriatic Sea

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Picophytoplankton are a small or major component of the phytoplankton community and present in all oceanic systems. They dominate in the low chlorophyll biomass areas, such as the (sub) tropical regions, but also contribute considerably (up to 20%) in the high chlorophyll biomass areas. *Synechococcus*, which is large (ca. 1 μm in diameter) relative to *Prochlorococcus*, is ubiquitously distributed from the open ocean to the coastal sea. Marine water samples were collected monthly in one meter depth at sample stations along coastal water of Adriatic Sea in Durres area. Total phytoplankton and picophytoplankton DNA content were measured via spectrophotometry in order to understand the growth rate of the populations in the sampled area. Also, physico-chemical parameters as temperature, pH, salinity, dissolved oxygen, percent oxygen saturation, turbidity, nutrients (N and P) there were measured to understand distribution of picophytoplankton populations. A biochemical molecule as *Chl a* were measured to conclude on the level of trophy of the sampled area. The existence of *Synechococcus* was proved via the amplification of 16S-23S specific ribosomal DNA. Especially pH and *Chl a*, salinity, dissolved oxygen and percent oxygen saturation explained much distribution of picophytoplankton in coastal waters. Coastal waters of Adriatic area, based in *Chl a* concentration were evaluated as hypertrophic level, which might be as a result of the excessive loads of nutrients in wastewaters discharged directly in Adriatic Sea.

Keywords: picophytoplankton, 16S-23S specific ribosomal DNA, Adriatic Sea, *Chl a,* physico-chemical parameters

Influence of Kosova A and B powerstation on water quality of Sitnica river-Kosovo

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The purpose of the research was investigation of Kosova A and B PowerStation influence on water quality of Sitnica river. The research was made to determine the bonity grade of Sitnica river water and the level of the load with pollutants. The water samples of Sitnica river were used for the research, which were taken from 3 localities along the river flow: Point 1- Vragolia village, right side; Point 2 - Hamidia village, right side and Point 3- Lumi I madhe village. These microbiological parameters were analyzed: total number of heterotrophic bacteria per 1ml; total number of coliforma bacteria per 1ml; total number of yeast and molds per 1ml.The grade of bonity was determined based on the Tumbling 1968, Slladaqek 1972 and Kohl 1975 system. Based on the obtained results can be concluded as following: all three researched points of Sitnica river (Vragoli, Hamidi and Lumi i Madh) are loaded with organic and inorganic materials. Point one has had the lowest number of bacteria, yeasts and molds; Point two has marked a great increase of the researched microbiological parameters. Point three with exception of spring season, has marked a significant decrease, which is believed that was as a result of the impact of Llapi river discharge before the research point. When obtained results are compared to the Sladacek, Tumbling and Kohl criteria than the conclusion is that researched water mainly belongs to IVth and Vth grade of bonity.

Keywords: Sitnica, powerstation, water

Posters

Growth of Arabidopsis seedlings on high fungal doses of *Piriformospora indica* has little effect on plant performance, stress, and defense gene expression in spite of elevated jasmonic acid and jasmonic acid-isoleucine levels in the roots

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The endophytic fungus *Piriformospora indica* colonizes the roots of many plant species including *Arabidopsis* and promotes their performance, biomass, and seed production as well as resistance against biotic and abiotic stress. Imbalances in the symbiotic interaction such as uncontrolled fungal growth result in the loss of benefits for the plants and activation of defense responses against the microbe. We exposed *Arabidopsis* seedlings to a dense hyphal lawn of *P. indica*. The seedlings continue to grow, accumulate normal amounts of chlorophyll, and the photosynthetic parameters demonstrate that they perform well. In spite of high fungal doses around the roots, the fungal material inside the roots was not significantly higher when compared with roots that live in a beneficial symbiosis with *P. indica*. Fifteen defense- and stress-related genes including *PR2*, *PR3*, *PAL2*, and *ERF1* are only moderately upregulated in the roots on the fungal lawn, and the seedlings did not accumulate H_2O_2/radical oxygen species. However, accumulation of anthocyanin in *P. indica*-exposed seedlings indicates stress symptoms. Furthermore, the jasmonic acid (JA) and jasmonic acid-isoleucine (JA-Ile) levels were increased in the roots, and consequently *PDF1.2* and a newly characterized gene for a 2-oxoglurate and Fe^{2+}-dependent oxygenase were upregulated more than 7-fold on the dense fungal lawn, in a JAR1- and EIN3-dependent manner. We conclude that growth of *A. thaliana* seedlings on high fungal doses of *P. indica* has little effect on the overall performance of the plants although elevated JA and JA-Ile levels in the roots induce a mild stress or defense response.

Keywords: *Piriformospora indica*, mutualistic plant/microbe interaction, stress response, defense, jasmonic acid, jasmonic acid-isoleucine, H_2O_2

The role of auxin in the *Colletotrichum graminicula – Zea mays* pathosystem

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The hemibiotrophic fungus *Colletotrichum graminicola* causes anthracnose disease in maize that can affect most plant tissues, but the stalk rot and seedling blight forms of the disease are the most economically damaging. During the biotrophic phase, this fungus depends on carbohydrates provided by living cells of its host. The role of hormones in this pathosystem is still elusive. The fungus causes "green islands" on senescing leaves and several physiological changes identified in green islands on infected leaves also occur when maize leaves are treated with cytokinins. We already know that *C. graminicola* is able to synthesize auxin *in vitro*. Our goal is to identify and characterise fungal genes encoding enzymes in the indole-3-acetic acid (IAA) pathway to gain a deeper understanding of the role of auxin in this relationship. By using double-joint PCR and **protoplast transformation**, we created deletion mutants of *C. graminicola* for the genes*IaaM* (encoding tryptophan monooxygenase) and *IaaH* (encoding indole-3-acetamide hydrolase). These two genes

encodekey enzymes in the IAA pathway,whichis known from plant-associated bacteria to play important roles in pathogenesis. We are on the way to characterise these deletion mutants in greater detail.

Keywords: *Colletotrichum graminicula*, plant-pathogen interaction, indole-3-acetic acid (IAA) pathway

Kinetic study of chamomile essential oils

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This study concerns the extraction process of bio-organic compounds from chamomile using as solvent liquid CO_2. Usually, the extraction of bio-organic compounds from herbs is carried out by steam distillation and organic solvent extraction. Nevertheless, long extraction time, toxic solvent residue, are involved when using such techniques. These disadvantages can be avoided by using the supercritical fluid extraction (SFE) process. Carbon dioxide (CO_2) is the most extensively used solvent in SFE. It is physiologically harmless, environmentally safe, non-explosive, and readily available. The objective is to obtain essential oils (bio-organic compounds) of chamomile herb and study the process of mass-transfer from the plant material into the extract. Theoretical mathematical models are applied for this purpose. The extractions are carried out using the high-pressure Soxhlet apparatus.

Keywords: Liquid carbon dioxide, essential oil, chamomile herb

Iron concentration in blood samples of females in Albania

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AAS were applied to determine iron content in human body. The content of iron in blood serum of pregnant and non pregnant women were analyzed. 77 samples of blood serum were collected during the period of February-March 2013 in accordance with the World Health Organization protocol. Statistical treatment of the data (Cluster analysis of observation) was applied to distinguish levels of iron in pregnant female from those non pregnant. Through the cluster analysis, based on 70% of similarity and Euclidian distance, the samples under investigation were separated in three groups; the first one with 33 cases, the second with 28 cases and the third group with 16 cases. During pregnancy iron level in the blood is reduced due to the growing baby and placenta but we observed normal levels of iron at pregnant female in comparison with those not pregnant. The results obtained do not constitute novelty of this study but demonstrate the effectiveness of therapy with substitute of iron (FerroTre and Ferrograd), during the first months of pregnancy.

Keywords: iron, female, pregnant female, blood sample, statistical treatment

Vascular plants as bioindicators of the air pollution in Durres

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Ligustrum lucidum, Fam. Oleaceae and Leandro plant, *Nevium oleander*, Fam. Apocynaceae were collected from urban area of Durres city, Albania with different anthropogenic impact in the city. Concentrations of Cu, Mn, Pb, Zn and Hg in leaves samples were analyzed by furnace AAS. Leaves from the selected trees were sampled during the March of 2013. 42 samples of leaves of four species of tree species were collected on 20 sampling sites among main streets of Durres city and a composite sample was prepared for the analyses of each tree sample. Wet digestion technique was applied for sample digestion in half pressure Teflon tubes. The trace metal contents were expressed as arithmetic means and standard deviation. The analytical data were subject to statistical analysis. Statistical analysis of the data was carried out using EXCEL and MINITAB-15 Package Programs. Correlation analysis ($p<0.05$) was carried out on the data set of heavy metals to describe their behavior and the association. Weak correlation ($R2<0.45$, $p<0.05$) were found between Pb-Mn, Zn-Cu and Mn-Cu in leaves samples. Multivariate analysis (Cluster Analysis, CA) were to detect the groups of samples with similar patterns of element concentrations and the number of the groups and most important factors were discussed. The sampling sites were classified in two main groups based similarity on the distribution elements concentrations. The data were also processed with factor analysis (FA) in order to identify the main source categories of the analyzed samples regarding site contamination and elements distribution. Two main factors were identified effecting differences in trace metals distribution: the species of the plants and samples position.

Keywords: vascular plants, *Ligustrum lucidum*, Fam. Oleaceae and Leandro plant, *Nevium oleander*, Fam. Apocynaceae, urban environment, air pollution

The frequency of preeclampsia in pregnant women

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Preeclampsia is a clinical syndrome peculiar only during pregnancy. From the date obtained in the maternity of the regional hospital of Shkodra city, department of obstetrics, for the period 2007-2012, are resulted 13. 994 paved mothers. Among this number 246 women are affected by preeclampsia, thus the value of incidence is 1.76%. Of the total number of paved mothers in the department of obstetrics for the period 2007-2012, 5.557 belong to Shkodra city, by these 71 women are affected by preeclampsia with the incidence 1.28%. From rural areas of Shkodra there are 7.223 paved women with 149 cases of preeclampsia by the incidence 2.06%. The number of mothers paved in the department of obstetrics, from the other districts of Albania, was 1.214 with 26 cases of preeclampsia by the incidence 2.14%. According the analysis based on the age of mothers, from 246 cases of preeclampsia, 38.6% belong to the mothers under

24 years of age, 48.4% from the mothers 25-34 years of age and 13% from the mothers over 35 years of age. The incidence rate of preeclampsia has a value of 1.63% in the age groups of mothers 15-24 years and 11.1% in the age groups of mothers over 44 years. This fact suggests that there is a link between the mother's age and the incidence of preeclampsia.

Keywords: incidence of preeclampsia, pregnant woman, risk factors of preeclampsia, health care

Determination of oxytetracycline, tetracycline and chlortetracycline in beef meat in Albania using HPLC-DAD detector

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A study was conducted from June 2012 to May 2013 to estimate the proportion of tetracycline residue levels in beef at main slaughterhouses in Tirana, capital of Albania. A total of 37 beef muscle samples were randomly collected from slaughtered beef in the slaughterhouses. The samples were analyzed by using high performance liquid chromatography, with Photo Diode Array detector. The detection limit of the method was calculated to be 25 μg/kg and the limit of quantitation was found to be 50 μg/kg. The recoveries of oxytetracycline, tetracycline and chlortetracycline from spiked samples at three fortification levels, were higher than 78% for all drugs. From 37 beef meat samples collected from different slaughterhouses of Tirana, only 4 samples showed detectable concentration of OTC residues but were lower than the maximum residue limits according to Commission Regulation (EU) No 37/2010. TC and CTC were absent in all samples. These levels were not able to induce risks to human health. However other studies are necessary to evaluate other drug residues in beef samples and to evaluate the hazards of these residues in relation with daily intakes and other related factors.

Keywords: Oxytetracycline, Tetracycline, Chlortetracycline, drug, residues

Analyzing the efficiency of agricultural crop production by using mathematical models

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Pepper (Capsicum annuum L.) is one of the main vegetables that is cultivated in our country. It covers about 3, 000 hectares and occupies an important place in the structure of cultivation. Its cultivation in large areas is done because it firstly is used widely in our traditional cuisine and secondly, provides high incomes per area. The yield per area depends from the agricultural technology implemented, the type of culture and the cultivated areas. Usually, in open field from 200 to 500 q/ha of land is used, while in protected environments from new hybrids over 800 q/ha. In our climate conditions, the pepper is very favorized and can be successfully cultivated in the open field and in protected environments. In the open field the pepper can be cultivated in three directions: For early production, semi-early (middle) and later production, while in protected environments it is cultivated during winter and early spring, where frosts and low temperatures do

not allow its growth and production. It is known that for the production of each culture are used various inputs. In this study, in order to analyze the pepper production efficiency cultivated in the greenhouses of Lushnja district, DEA model was used (Data Enveloppent Analysis). The DEA models represents one of the most important applications of mathematical programming in the agricultural economy. The chosen Output is the yield of pepper cultivated in greenhouses (q/are), while the inputs include: manure (q/are), fertilizer (q/dyn), liquid crystal manure (q/are), pesticides (q/are) and irrigation (m3/are). From our analysis we found out that units 4 (Fiershegan), 5 (Allkaj), and 6 (Krutje) gave a DEA efficiency of 100%, while other units (municipalities of Lushnja district) are less efficient. The aim of DEA model, is not only to analyze but also to improve the efficiency of the inefficient units. Through this model, the weights of the composite unit which resulted more efficient than the non-efficient units were found, which means that this unit produces output greater than or equal to the output of the unit under study, requiring smaller or equal amounts of input.

Keywords: efficiency, agricultural production, DEA model, composite unit, pepper, Lushnja district

The biological invasion in Albania

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Albania, whose territory comprises many types of habitats and is characterized by a rich biological diversity, is particularly vulnerable to the threats posed by alien invasive species. The spread of invasive alien species is creating complex and far-reaching challenges that threaten both the natural biological riches of the earth and the well-being of our people. While the problem is global, the nature and severity of the impacts on society, economic life, health, and natural heritage are distributed unevenly across nations and regions. Some aspects of the global invasive alien species (IAS) problem require solutions tailored to the specific values, needs, and priorities of nations while others call for consolidated action by the larger world community. Preventing the international movement of invasive alien species and coordinating a timely and effective response to invasions requires cooperation and collaboration among governments, economic sectors, non-governmental organizations, and international treaty organizations. Many features have been attributed to invasive species and invaded ecosystems, but none are universal and invasive species tend to have a suite of traits rather than all of them. The large numbers of alien organisms introduced into Albania do not generally endanger the biodiversity on a large scale.

Keywords: alien species, invasive alien species (IAS), introduction, intentional introduction, establishment

The qualitative differences for photosynthetic content of the *Phaseolus vulgaris* in Kosovo

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Genetic diversity analysis of common bean populations is useful for breeding programs, as it helps to select genetic material to be used for further crossing. Twenty (20) common bean populations were analyzed using different qualitative traits including chlorophyll "a" (Chl *a*), chlorophyll "b" (Chl *b*), Total Chlorophyll "*ab*" (Total Chl) and carotenoides. The design of experiment was conducted with leaves of Common bean collected from different regions of Kosova. The experiment was completely randomly with four repetitions. Pigments were extracted by grinding 80-100 mg freshly sampled leaves in 80% (v/v) acetone/water containing $MgCO_3$ at room temperature 24 h in the dark. Concentration of chlorophyll and carotenoid contents were measured by spectrophotometer using absorbance recorded at 663 nm, 644 nm and 452.3 nm for maximum absorption of Chl *a, Chl b*, and carotenoids respectively. According to our data the differences between populations for Chl *a*, Chl *b*, was significantly higher at level of probability LSD p=0.01. The average vlaues for Chl *a* was 1.67 $mg \cdot g^{-1,}$ while for Chl *b* was 0.74 $mg \cdot g^{-1.}$ Also, the results for carotenoids content between populations were with huge differences and higher on genetic variation.

Keywords: bean, population, chlorophyll, carotenoid, variation

Evaluation of the correlation between pH and MPV platelet concentrates prepared in Tirana Blood Transfusion Center

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The quality of platelet concentrates is an important option in transfusion therapy. pH and platelet indices have been found to be valuable parameters for monitoring the in vitro quality of platelet concentrates. Platelet activation which leads to loss of its functionality has been demonstrated by changes in those two parameters. The aim of the study was to evaluate the correlation between pH and mean platelet volume (MPV) in platelet concentrates in order to examine the quality of platelet concentrate. 150 units of platelet concentrates were produced by platelet reach plasma (PRP), and stored for 5 days. Then MPV and pH were analyzed by automated hematological cell counter and Ph meter respectively. Regression analysis showed that there was a significant influence of pH changes on the changes in MPV ($P< 0.001$). On the other hand, increase in pH lead to decrease in MPV. Storing platelet concentrates up to 5 days may stimulate platelet activity, enhancing its size and resulted in its destruction, so the remaining platelet are those with significantly lower MPV. Also platelet activation was those with an increase in pH. As a result measurements of MPV and pH have a great potential as quality markers of platelet concentrates.

Keywords: MPV, platelet concentrates transfusion

Foodborne intoxication at emergency room

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Introduction: Foodborne illness is a serious public health problem. Recent changes in human demographics and food preferences, changes in food production and distribution systems, microbial adaptation, and lack of support for public health resources and infrastructure have led to the emergence of novel as well as

traditional foodborne diseases. With increasing travel and trade opportunities, the risk of contracting and spreading a foodborne illness now exists locally, regionally, and even globally. The aim of the study is present an etiological overview of acute foodborne diseases presented in emergency room in a developing country such as Albania.

Methods: A retrospective study including 144 patients presented at the emergency department of the University Hospital Centre in Tirana from January to December 2013 to with acute foodborne gastroenteritis as the primary diagnosis. Fecal specimens were tested for a range of bacterial, according to standard laboratory procedures.

Results: 103 (71.5%) patients underwent a laboratory examination. Enteropathogens were identified in 54% of tested patients. *Salmonella enteritidis* was the most common pathogen found in 36 (35%) of 103 patients followed by Campylobacter spp. in 16 (15%) patients and *E. coli* in 3 (4%) patients.

Conclusion: *Salmonella enteritidis* was the most common cause of food-related disease. The key methods for addressing microbial contamination and preventing foodborne illness are through surveillance, education, research, risk assessment, outbreak containment in which physicians have a critical role in their prevention and control and improved inspections and compliance.

Keywords: Salmonella, disease, prevention

The preliminary study about the antibiotics pollution in aquaculture environment and potential ecological and human health issues

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The presence of antibiotic residues in terrestrial and aquatic systems, resulting largely from discharges from municipal wastewater treatment plants (WWTPs) and land application of animal wastes, is now well documented in the literature. Many animal confinement operations generate manure that contains antibiotics because animals receive these drugs in feed rations, either as growth promoters or as therapeutic agents. Treated animals excrete antibiotic metabolites and some no metabolized antibiotics, which are then introduced to agricultural lands through repeated fertilization with animal manure. This study aims to evaluate the levels of antibiotics pollution in aquatic environment and potential ecological as like as in human health issues. We collected samples in from sea water and fish tissues Golem's Adriatic Sea which is located in the west part of Albania near Kavaja city. For the samples were taken 10 water samples and 100 fishes samples. All samples that w e collected were analyzed for the presence of residues of the antibiotics residues levels in Department of Toxicology in ISUV, Tirana, Albania about levels of antibiotic residues with screening and analytical methods test. All results discussed and presented in tables and graphs as well as worked with statically methods as like as ANOVA test. In order to monitor and control all pathologically disorders in fishes which we sampled. Therefore this study is focused mainly in their analysis. Variability on different operating units, removal efficiency on primary and secondary treatment level, and comparison of the effluent value with the discharge standard (mg/l and %) are been analyzed for all main wastewater parameters BOD, COD and TSS. After an overall analysis of the effluent parameters in different operation units, can be concluded that operation of levels of antibiotic residues in aquatic environment and fish tissues and any influences in human health as well as to explain antibiotic resistance process.

Keywords: sea water, fish, screening methods, antibiotic residues, antibiotic resistance

Impact of human-induced threats on the activity of the otter (*Lutra lutra*) along the Drinos valley, Southern Albania

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Impact of human disturbance or threats on the activity of the otter along the Drinos valley has been studied during the two years period of time 2010-2012. The Drinos river and its tributaries, water reservoirs, and trout fish-farms situated in the Drinos valley were included in the study. The whole 60 km Drinos river was divided in three sections based on a set of environmental factors (vegetation cover, water regime, and human disturbance). Each of the three sections was divided in 200 m long stations. In each station the presence and/or absence of human disturbance or threats were assessed, such as destruction of food sources or feeding sites, habitat destruction, water pollution, animal persecution, roads and traffic, and human interference in hydrological regime of the river. Human disturbance was present in 19.33% of the stations in the river section Kakavie-Virua, 14% of the stations in the river section Virua-Andon Poçi and 25% of the stations in the river section Andon Poçi-Vjosë. In addition, human disturbance was higher along the western riverbank of Drinos, due to proximity of the national road passing by. Results of our study reveal significant influence of the human disturbance in the activity of the otter along the Drinos river. Thus, the values of the otter marking activity along the western (more disturbed) and eastern (less disturbed) river banks change significantly during both maximum and minimum river flow seasons, respectively (χ^2=428.7***, p<0.001) during maximum river flow season, and (χ^2=437.3***, p<0.001) during the minimum river flow.

Keywords: the otter, human disturbance, Drinos river, marking activity

Trace element accumulation in the moss *Pseudoscleropodium purum* in South Albania

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For the first time the moss biomonitoring technique has been applied to air pollution monitoring in south Albania. The most important environmental features of mosses as a suitable tool of biomonitoring are: rootless, large surface, wide - spread population, a habit to grow in groups, long life – cycle, survival in a high – polluted environment, an ability to obtain nutrients from wet and dry deposition. The moss *Pseudoscleropodium purum* was used as a bioindicator and biomonitor of metal pollution. In this work the bioaccumulation of trace metals (Cd, Pb, Cu, Mn, Fe, Na, K and Zn) in moss samples collected from 9 sites of the southern part of Albania is presented. Moss samples were collected during the period September – October 2010 according to the guidelines of the UNECE ICP Vegetation. The concentrations of heavy metals in moss samples were determined using AAS technique equipped with flame and/or electro-thermal systems. AES method was used for Na and K determination. The variations of heavy metals concentrations

with sampling sites are shown in heavy metal contamination diagrams. PCA and cluster analysis was used to identify the most polluted areas and characterize different pollution sources.

Keywords: biomonitoring, *Pseudoscleropodium purum,* trace metals, atmospheric deposition

Monitoring heavy metal pollution in Elbasan using passive and active moss

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Environmental pollution is increasing day by day, posing a very serious problem for human health. A large number of pollutants, including heavy metals, are adversely affecting our environment. Heavy metals are emitted from solid fuel combustion, vehicular emission and in industrial processes. Mosses are widely used as bio-monitors. Since the mosses have not roots system, and their leaves have not protective layer, they absorb nutrients through their thin leaves, directly from the air. Accumulation of heavy metals in the leaves of the mosses, is attributed to the presence of negative charges that possess in leaves. The assessment of heavy metal pollution in the Elbasani area was carried out in this study, by using native mosses (passive method) and "moss bag" (active method of monitoring) bio-monitoring. *Hypnum cupressiforme* sp. were used in both monitoring methods. The "moss bags" were exposed for 6 months at various points in the area, while the native mosses were collected at two points in the study area. Heavy metals as Ni, Cr, Fe, Ca, Mg and Zn were analyzed in exposed and native mosses. Indigenous moss samples were analyzed with ICP / AES technique, while the exposed samples, "moss bags", were analyzed with FAAS technique (Fe, Zn, Ca, Mg) and with GFAAS technique (Cr, Ni). The data obtained was used for calculating the contamination factor (CF). The results of CF data show that the Elbasani area is polluted by heavy metals due to industrial activity.

Keywords: bio-monitor, moss-bag, heavy metals, ICP/AES, FAAS, GFAAS

The mineral composition in grassland growing in Kosova

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Grasslands represent a land-use which is effective and has great economical importance in the European agriculture. Grasslands represent an important and effective source of energy and proteins to ruminants, and combine high yield stability and draught resistance with low tillage operations and pesticide use and thus leading to good environmental conditions. Furthermore, good management practice in grasslands provides high potential of carbon sequestration in soils, resulting in climate change mitigation. The field experiment were carried out on a field study was conducted in the central part of Kosovo, respectively Lipjani location 15 km near the capitol city of Prishtina. The plot sizes were 81.5x 8 m per plot or 12 $m^{2.}$ The fertilization also was used in quantity 80 kg N $ha^{-1.}$ In experiment was including four treatments: C- Control (normal cutting without harrowing); Cutting regime include; A-One week early without harrowing, B- One week

later without harrowing and H-With harrowing. The results were obtained in our study demonstrated that substantial differences in mineral composition exist in grasslands. The four treatments had considerable variation in mineral composition. The Aluminum (Al) and Calcium (Ca) content ranged from 0.36 to 0.19 and 5.07 to 7.31 g kg^{-1} respectively. The analysis of traits according to Pearson correlations, are ascertained variable values of the phenotypic correlation coefficient.

Keywords: Grassland, treatments, mineral composition, correlation

Heavy metals in muscle tissue of European hake (*Merluccius merluccius)*

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The aim of the study was to evaluate and monitor the concentration level of heavy metals like, Hg, Pb, Cd and Cr in muscle tissue of *Merluccius merluccius* (European hake) species. The concentration level of heavy metals in muscle tissue was determined by using atomic absorption spectrophotometer (AAS). The result of the investigation revealed that heavy metals are present in *Merluccius merluccius* at different concentration values. The distribution of metals followed this order: Cd>Cr>Hg>Pb. Moreover the result also indicate that the concentration level of Cd (0.25 mg/kg w w) in this specie exceeded the maximum permitted level for human consumption set by EC legislation. The data of this investigation indicate that *Merluccius merluccius* must be object of further investigation, with the finality to safeguard the consumers health.

Keywords: heavy metals, concentration level, *Merluccius merluccius,* muscle tissue

Immunological reactions caused by helminthes and diagnosis of parasites using different methods

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Helminthes are one of the causer agents of the type I reactions of hypersensitivity. In this article will review the findings of recent human studies of the association between helminth parasite infections and allergy and discuss their potential relevance to public health. The parasitic worms are an important risk factor for anaphylaxy reaction, but this could be explained by an enhanced ability of atopics to produce IgE. The human immune response to helminth infections is associated with elevated levels of IgE, tissue eosinophilia and mastocytosis. The involvement of immunologic mechanisms in the pathogenesis which are caused by worms in the gastro-intestinal tract are associated with anaphylaxy response. For this study, feces were collected primary in children aged 1-15 years old, because the worms are most frequent in these ages. Through the coproscopic method were analyzed as biological materials, the feces of 300 children for the presence of protozoa's eggs, helminthes larva, trophosoids, cists, etc. We have taken photos of the positive cases. The analysis have been done in the Parasitological Laboratory of the Institute of Public Health, Tirana through the method of concentration with floatation in sulphat zinc; the permanent color as Ziehln-Neelsen stain, Giemsa stain, Blu-metilen, etc. We have used the color methods and blood striche to diagnose the

eosiniphilia presence. To determine the IgE are used the EIA kits. The level of the eosinophyle and IgE in the blood is performed in 152 individes who had been positive cases by helminths.

Keywords: Immunoglobulin E, helminthes, eosinophils, gastro-intestinal tract

Terrestrial macroinvertebrates of seed bugs (Lygaeidae, Hemiptera) in different ecosystems

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The *Lygaeidae* family includes species of small to middle dimensions. Their scutellum looks like Y letter, and their legs own tarsus composed by 3 segments. They are phytofage species, but it has been found that some species can feed also with the vegetative parts. In that family are identified some predators. This paper present studying of *Lygaeidaephauna* for the different ecosystems in Spille, M. Robit, Golem, Divjaka and Kolonja stations. This stydy is important on the taxonomycal and ecologycal aspects to fauna. The biological material is collected during the expeditions of 2011-2012. The collection of biological samples was achieved through the use of entomological nets of 80 cm diameter, and Pitt's traps. Entomological mowing nets of 80cm diameter, aspirators and Pitt's traps were employed. Mowing with Entomological nets is achieved according to the diagonals for surfaces of 100 m^2 (10m x 10m), passing five times across each square' diagonal. The fine biological materials were placed in plastic flacons 150-200 ml. They were preserved to the scientific laboratory in bottles of ethanol solution 95%, acetic acid, distilled water in 80:5:20 ml, and some ether drops. The biological samples were analyzed and determined by Stereomicroscope *ZEISS*. In that study it has been determined 29 individuals. The family *Lygaeidae* was presented by 8 genus and 13 species. The *Lygaeus* genus was represented by the highest number of speies, by 3 species, and frecuency 23.08%. Analyzing of the material to the stations, it has been found that the station with highest number of species, resulted the Golem station, with 10 species or frequency 76.92%. Based on their morphology, like tiny insects, we have compared our findings with previous monitorations, and it has resulted that thier status is constant.

Keywords: Hemiptera, Lygaeidae, ecosystems

Systematic and ecological analysis on plant bugs (Miridae, Hemiptera) in the habitats of Lushnja region

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The family of *Miridae* Hahn, 1831 (plant bugs), presents a considerable number of species on Hemiptera, approx. 9800 species. It is evaluated that these insects can damage the agricultural crops. Due to their features they are applied as integrated biological weapons. This paper aims to increase the entomophauna knowledge of the country. It presents the species belonging to this family in the different habitats of Lushnja region, Albania. The biological material is collected during of period 2011-2012. The collection of

biological samples was achieved through the use of entomological nets of 80 cm diameter, and Pitt's traps. The fine biological materials were placed in plastic flacons 150-200 ml. They were preserved to the scientific laboratory in bottles of ethanol solution 95%, acetic acid, and distilled water. The biological samples were analyzed and determined by Stereomicroscope *ZEISS*. This study analyzes 102 individuals, and it has been found 17 genus and 25 species. The genera *Lygus* is the most represented with 3 species and a frequency of 12%. Habitats of Divjaka station are represented by more species compared to other stations, with 15 species and a frequency of 50%. Based on the "*Jaccard index*", Divjaka and Cerma stations present a higher similarity coefficient, with 50.02%. The Zoogeographic regions of Palearctic, is representing by a higher number of species, with 11 species and frequency 44%. Compared to the elevated number of species for that family, it has been found that thier number is limited in the area of the study. We think that the main reason is the economical development in the Western part of the country.

Keywords: Hemiptera, Miridae, ecosystems, dominance, habitats

Frequency of four phenotypes, survival and growth indicators of carp (*Cyprinus carpio* L.) produced in the plant Klosi (Elbasan), in stages of "fry" and "fingerlings"

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The "*Klosi Fish-Breeding Farm*", Elbasan was chosen as a suitable place for studying of several phenotypes of species of *Cyprinus carpio L* in central part of Albania. During the breeding seasons on period 2012–2013 were studied frequencies type of scales in "frys" and" fingerlings" of carp (common carp) (*Cyprinus carpio L.*) and was also estimated impact of their phenotype characteristic on survival parameters. Here are presented some preliminary result of the study. Thus, we have proved that 81.6% of Frys (total 16,524 individuals) represents with phenotype "*scaled"and* Frequency of Frys with phenotype " *linear mirror"* was 9.4% (1904 individuals). Fingerlings with phenotypes "*leather mirror*" and "*scaled scattered*" are encountered with respective frequency 4.1% and 4.9% (830 and 992 individuals). We also, can show that, the presence of phenotype "*scaled distributed"* (**genotype ssnn**) of Frys is relatedby artificial reproduction of **genotype Ssnn**. Some others parameters were: The highest value of survival characteristic was detect for"*Scaled"* phenotype of fingerlings species (80.99%). Phenotype "*linear mirror"* of carp fingerlings represents with value of survival 65.02%. Respective value of survival in *fingerlings stage*, for "*leather mirror* " and "*scaled distributed"* phenotype of carp were 60.96% and 76.01%. The greater average value of weight of"*Scaled* " phenotype of fingerlings were 44,535 ± 4,149 g. The smallest average value of weight (31,395 ± 2,032 g) was observed for fingerlings with "*Linear mirror* " phenotype. As result, we can prove that, fingerlings breeding of different types of carp in semi-intensive system represent with different value of growth, and "scaled" phenotype represents dominant to other phenotypes.

Keyword: *Cyprinus carpio* L, phenotype, fingerlings, "*scaled"*

Food allergy in children (6 to 11 years old) in Tirana

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One hundred and twenty Albanian children from 6 to 11 years of age, descending from two different school, were considered as representative sample of Tirana children population. After we filled the questionnaires we estimated the level of the eosinophyle and immunoglobulin E (IgE) in the blood. In this article, we summarize the state of knowledge about the healthy immune response to antigens in the diet and the basis of immune deviation that results in IgE sensitization and allergic reactivity to foods. Food allergies are increasing in prevalence at a higher rate than can be explained by genetic factors, suggesting a role for as yet unidentified environmental factors. The intestinal epithelium forms the interface between the external environment and the mucosal immune system, and emerging data suggest that the interaction between intestinal epithelial cells and mucosal dendritic cells is of particular importance in determining the outcome of immune responses to dietary antigens. For more than 50 years, many children with food protein allergies and other forms of dietary protein intolerance have been treated successfully with protein hydrolysates with highly reduced allergenicity and, more recently, also with products based on amino acid mixtures. We have used the color methods and blood striche to diagnose the eosiniphilia presence. To determine the IgE are used the EIA kits. There is no correlation between the size of a skin prick test or the level of specific IgE and the clinical sensitivity in individual patients.

Keywords: immune response, food allergy, immunglobulin, antigen

Serological survey of Crimean-Congo hemorrhagic fever virus in cattle in Berat and Kolonje, Albania

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Crimean–Congo hemorrhagic fever (CCHF) is a tick-borne disease caused by the arbovirus Crimean–Congo hemorrhagic fever virus (CCHFV), which is a member of the *Nairovirus* genus (family *Bunyaviridae*). The disease now occurs sporadically throughout much of Africa, Asia, and Europe and results in an approximately 30% fatality rate. Numerous genera of ixodid ticks serve both as vector and reservoir for CCHFV; however, ticks in the genus *Hyalomma* are particularly important to the ecology of this virus. The aim of this study was to examine the distribution of CCHFV among the cattle in Berat and Kolonje regions in Albania. The data taken in this study indicates for the presence of CCHFV Crimean-Congo hemorrhagic fever virus in these countries. The serum samples were conserved in -20°C and tested with immunological methods using indirect ELISA assay in Friedrich-Loeffler Institute (FLI), Greifswald Germany. Through this technique it was possible to identified IgG antibodies in infected serum samples. From these results in

Berat-Terpan we had an indication about the presence of IgG antibodies in 2 blood samples. 3 serum samples were equivocal and 45 serum samples were negative from the total of 50 serum samples in cattle. While in Kolonje-Erseke the results show the presence of IgG antibodies in 4 blood samples from 54 seum samples in cattle. Respectively the prevalence in these 2 countries in Albania is 4.4% and 8%. These results can clearly proved the presence of CCHFV in livestock in Albania.

Keywords: CCHFV, Nairovirus, Bunyaviridae, Indirect ELISA, FLI

In situ conservation of buffalo's nucleus herd in Divjake, Albania

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An *in situ* conservation program, oriented to sustainable economic use for buffalo's population, started at the begining of 2012 years. A buffalo's herd of 113 heads composed of animals originated from two ex nucleus farms were included in the program. This species, based on number of breeding animals is categorized at risk of extintion, The short term objectives of the program are: (i) stoping the reduction of population size and enlargement of real (census) and effective population size, (ii) maintenance of the genetic variability by a breeding and mating scheme to decrease inbreeding and genetic drift within buffalo's nucleus herd and two other small herds (26 buffalo cows and 3 buffalo bulls), that are going to be invloved in 2015 (an "open" nucleus design); (iii) improving the management of the animals at farm level and (iv) estimation of productive and reproductive performance of nucleus herd; (v) access to local market. Long term objectives: (i) Optimizing genetic improvement program and production system; (ii) development of high-quality products for niche markets; (iii) promoting private incentives to support and provide the sustainability of *in situ* conservation program and economic use of this species. (iv) establishing buffalo breeders association. The estimation of the population size, structure and trend were based on the analysis of the data collected to nucleus farm. All animals remained in the active breeding nucleus herd, as the extent of genetic drift depends on the number of individuals available. All young females are kept for replacement stock. As pedigree data were not available, a mating and within family selection scheme is being applied for balancing the contribution of each individual, controlling inbreeding and maintaining a larger effective size of population. Each sire was mated to a fixed numbers of dams. F:M ratio (r=10). Selection, according to principle, one male from each sire family and one female from each dam family (each sire is replaced by one of his sons and each dam by one of her daughters) in next generation have been planned. The yield of the complete lactations was estimated according to the method of Test Interval. Milk sampling was carried out according to ICAR guideline. Milk samples were analyzed by Gerber Laktostar. Live weights of buffalo calves at birth, 3 months, 6 months were estimated. Results: the reduction of population size was stopped. Two new male lines were established and other one will be added in coming year. Five other lines will be added in 2015 (nucleus + two other small herds). If compared to 2012, number of breeding animals in nucleus herd was increased by 11.3% for 2013, and it will be increased by 30.5% and 67.8% for 2014 and 2015 years respectively. Effective size (Ne) of nucleus herd population from 18.3 was reached to 21.8 for 2013 and it will be reached to 25.4 for 2014. In 2015 years, Ne will be reached to 43.5 (nucleus + two other herds), while Δ F per generation will be equal to 0.8%. Phenotypic indicators achieved for 2013 year: Fertility 83%; average milk yield (kg, milked) according to the lactations: I, 540 ± 73; II, 610 ± 74; III, 680 ± 87, IV, 704 ± 93. Lactation length (days): I, 253 ± 14; II, 258 ± 15; III, 263 ± 11, IV, 262 ± 13. Body weight of buffalo calves (kg): at birth (F, 22 ± 2.84; M, 24 ± 2.76); at 3 months (F, 50.8 ± 7.6; M, 55.6 ± 8.9); at 6 months (F, 92.6 ± 8.04; M, 102.6 ± 11.3). Average daily gain (g) from birth to 6 months old: F, 392 ± 47; M, 434 ± 62. The content in fat, protein and lactose of whole milk analyzed: Fat %, 7.86 ± 1.2;

protein %, 4.6 ± 0.62; lactose %, 5.2 ± 0.67; Conclusion: (i) Buffalo population is characterized by a considerable variation of its own phenotypic traits. Optimal management by implementing *in situ* conservation and genetic improvement program that support the sustainable economic use is the main way for maintenance and sustainable development of autochthonous species and breeds that are threatened by the risk of dilution or extinction; (ii) while buffalo population is situated on touristic area and part of an ecosystem characterized by a high biodiversity, it could be seen as integral part, which positively affects on this ecosystem and also contributes to agro-tourism development offering high quality products to local market and larger.

Keywords: autochthonous species, maintenance, breeding, performance

Detection of methicilin resistant *Staphylococcus aureus* using five different methods

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Methicilin resistant *Staphylococcus aureus* (MRSA), has become a significant clinical pathogen because of its increasing prevalence in the community, significant nosocomial dissemination, frequent treatment failure, and limited therapeutic options. So, rapid and accurate identification of MRSA is required to immediately start the appropriate antimicrobial therapy and to avoid the spread of these strains. The present study was undertaken to compare five phenotypic methods for the detection of MRSA. 140 *S. aureus* isolates were collected from University Military Hospital in Tirana between December 2012 and December 2013. The isolates were obtained from cultures of different specimens including wounds, blood, sputum, urine. Out of 140 isolates, oxacillin DD (disc diffusion) method detected 59 MRSA, cefoxitin DD 63 MRSA, Etest 61 MRSA, oxacillin screen agar 56 MRSA compared with Latex PBP2a which detected 64 MRSA. The cefoxitin DD methods was found to be highly sensitive and specific, respectively 100% and 96% when compared with Latex agglutination for PBP2a, followed by oxacillin Etest with 98.39% sensitivity and 94. 81% specificity. Sensitivity and specificity were lower for oxacillin DD method, respectively 90.77% and 81.33% and oxacillin screen agar with 86.15% sensitivity and 94.81% specificity. The cefoxitin disc diffusion method, as recommended by the CLSI, was found to be a reliable method for MRSA detection compared with PBP2a latex agglutination. This method is cost effective and easy to perform. Latex agglutination is a rapid and not dependent of environmental conditions. So a combination between both methods would be the best choice for MRSA detection.

Keywords: disc diffusion, oxacillin, cefoxitin, PBP2a, Etest

Organic matter digestibility of some soybean varieties using enzymatic method

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The determination of feedstuff digestibility is needed for feeding value evaluation and better feed ration formulation. Four soybeen varieties (Vnimk-2, Watworth, Weber and Floria) tested in a thre year experiment for their productive performances and resistance against illness and damages were also analised

for their chemical content (Weende scheme) and organic matter digestibility according to celulas method. The celulas used was Onozuka Serva R-10" from Trikoderma viride. The protein content was similar for Weber, Wnimk and Floria (37.17 to 37.74% of dry matter) and higer for Watworth varietete (38.76%). The celulas digestibility of organic matter (% of dry matter) resulted to be higher for Watworth, Vnimk-2 and Floria varietets (95.7; 96.36; 95.90) and lower for Weber varietete (93.66). A high negative corelation (0.94) was observed between crude fiber content and organic matter digestibility. The enzimatyc digestibility resulted to be suitable as fast and rèproductive method for organic matter digestibility determination of feedstuffs.

Keywords: soybeen; enzymatic digestibility

The evaluation of physical – chemical characteristics of the milk and white cheese produced in the southern region of Albania

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Physic-chemical characteristics of milk, especially fat and protein content, are considered as very important parameters related with the productivity of Albanian white cheese. White cheese is a white brined cheese traditionally made from sheep milk or from a mixture of sheep and goat's milk. It has a slightly granulometric texture with small or no holes. Sheep's and goat's milk were taken from the region of southern Albania. Samples were analyzed during a two year period (2012-2013), from January to July. In the mean time there were analyzed all the chemical parameters of the cheese produced by the same milk. Sheep's milk was evaluated as follows: Beginning lactation: Fat= 7.68%, Protein = 5.97%, SNF = 11.57%; Midpoint lactation: Fat = 6.71%, Protein = 5.81%, SNF = 11.41%; Late lactation: Fat = 7.18%, Protein: 5.82%, SNF = 11.07%; The increasing of fat and protein content is related directly with white cheese yield, taking into consideration their standard values. The addition of goat's milk reduces the percentage of total fat in the mixture, a lower value according to respective standards. Not only milk parameters but even mixture of different kinds of milk affects cheese yield. Different mixtures of sheep/goat milk are used in white cheese production. The increase of the quantity of goat milk in the mixture decreases cheese yield.

Keywords: milk characteristics, lactation, white cheese yield

Meat Dressing and carcass Yield of the Lamb (Sharri x Virtenberg)

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Important component of feeding for the population are representing the indigenous animal genetic resources. In Kosovo sheep production, crosses of Sharri x Virtenberg sheep play a significant role in regard to meat

production and consumption. Our study was focused on the physical performance of these lambs and body weight growth by the end of weaning period of lamb crosses, with a special accent on the carcass yield and meat dressing percentage. In this study 10 lambs Sharri x Virtemberg (5 males and 5 females) aged 90 days, were included. At the end of the weaning period, male lambs achieved live body weight of 26.13 kg/head, compared with those of female sex 24.30 kg/head. After slaughter, the carcass of males weighted 13.83 kg versus females with 11.76 kg. Immediately after slaughter, the meat percentage yielded 50.7%. About 8 hours after slaughter, the counting losses for about 1.2 kg were observed and real value for dressing percentage of 46% was achieved.

Keywords: body performance, crosses, dressing percentage, carcasses yield

Forestry seedlings production by biotechnological methods, the forestry of 21th century in Albania

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The forest biotechnology group on the Faculty of Forestry Sciences is an interdisciplinary research group dedicated to the development and application of advanced technology for the enhancement of forest regeneration and adaptation. Technical capabilities include ecophysiology, forest ecology, tissue culture and adaptation to climate change. These techniques are also being used to improve nursery culture regimes, pest's management by biological fighting, planting regimes and new product development for a variety of broadleaf species (Oaks under ecological stress). Successful regeneration relies on the application of work from many forestry disciplines toward the common goal. At the center of any successful program is the production of high-quality seedlings that have god performance on reforestation site. Performance of an reforestation site depends on seedlings growth potential to be expressed. Seedlings growth potential is influenced by the inherent genetic make-up of source material and the culture used during nursery development. If these attributes can be directed toward improving seedling growth on a reforestation site, then the potential productivity of reforestation/aforestation will be increased. Disciplines that are oriented toward improving these faces of producing high-quality seedlings are the main focus of Forest biotechnology group. The main objectives of this study have been: Defining species through ecophysiological parameters; Developing advanced propagation systems through somatic embryogenesis tissue culture technology; Applying ecophysiological assessment techniques in support of seedling production, improved quality and reforestation site performance. The first results, presented in this paper, have been optimistic, but still the profound studies are needed. The main benefit impacts using biotechnology methods in forestry are: A model of sustainable development; Maintaining forest biodiversity; Extending to new areas. As the conclusion the Commercialization of biological technologies for forest tree species promise to dramatically lower raw material costs, maximize processing efficiencies, minimize environmental impacts, and improve product performances.

Keywords: tissue culture, ecophysiology, forest oak species, cost effectiveness

Callogenesis and the influence of iba on rhizogenesis of olive green parts

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Macroexplants consisting of two nodes with leaves were prepared by the tip of sprigs of 20 autochthonous cvs in the olive collection of Valias. In addition to Control treatments with IBA 2g/l^{-1}, 5g/l^{-1}, and 8g/l^{-1} were applied at the beginning of spring. Morphological and physiological exchanges were controlled for the temperature of substrate and environment 24°C and 18°C and for air humidity 95%, throungh mist propagation method.. The results exposed the genetic origin and endogenous predisposition as the beginner of rhizogenesis which fluctuated from 4.6% to 27%. Whereas the auxin increased rhizogenesis 28.7-48.9% as per concentrations compared to control. The cultivars had good callogenesis of 43.6/95.4% (5 > 8 > 2 > 0 g/l^{-1} IBA), whereas rhizogenic capacity was average 14.7/63.6%, conditioned by hormones. Correlation between callogenesis and rhizogenesis was considerably good for cv. Kushan, Kaninjot, Freng (r^2=0.93) and average for cv Kotruvsi, u Kuq, Mixan etc (r^2=0. 55). Maximum per rooting was 95.2% whereas the number of adventives roots was 8.8. At this phenophase of meristematic development use of dosage 5g/l^{-1} is more justifiable than with the two other concentrations of IBA and Control (r^2=0.94).

Keywords: Macroexplant, Rhizogenesis, Callogenesis, Olive, Propagation, Cultivar

Role of nitrite in processed meat products and its degradation during storage

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This paper represents the analytical data of nitrite level obtained from the experimental work done on meat processed samples taken from a meat processing plant (EHW) in Tirana. There has been a long debate and health concern about the nitrite content in meat products. Nitrite is added to e. g. sausages, and hams and other meat products to preserve these products and keep them free from dangerous bacteria. Among the aims are preventing botulism, a dangerous food poison. But also it's important to use the smallest possible amount of nitrite as a preservative because nitrite in meat can also form nitrosamines, which can damage the health. That's why the role of nitrite in processed meat and its recommended level conform to new EC Regulations are given in the introduction part of this paper. It is important that the nitrite level be monitored during all the processing steps up to the end consumers. This makes the objective of this paper. It gives the analytical data on nitrite level on meat processed samples taken and tested during their storage and ripening period of time. Different kinds of meat products are taken and tested to evaluate the influence of various parameters (storage time, time until to the end consumers, various kinds of packing) in the degradation rate of ingoing nitrite and stability of end products.

Keywords: nitrite content, degradation rate, ripening period, storage time

Evaluation of microbiological criteria of raw milk in Albania

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This paper gives the results of the Albanian monitoring plan for the raw milk in 121 domestic subjects: producing farms, collecting points and processing plants. The main objective for this monitoring was the evaluation of milk microbiological criteria. This monitoring was carried out during the year 2013 separated in two phases: 1-31 May and 1-31 October. Milk sampling was made by Regional Directorates Inspectors of National Food Authority in conformity to S SH ISO 707:1999 "Sampling method of milk and milk byproducts". This evaluation was carried out based on the norms laid down in Decision of Council of Ministers Nr. 1132 date 05.08.2008. "Approving norms for collecting raw milk". 415 samples were analyzed in total for the total content of micro flora and somatic cells. The first test was determined according to ISO 4833:2003 Method "Food and feed microbiology". Somatic cells content was determined according to White-Side-Test (WST) in all regional laboratories except for the regions of Gjirokastra and Tirana. In Tirana the tests were made in the Institute of food safety and Veterinary. In these both regions the tests were made according to California Mastitis Test (CMT) while in the region of Korca the Microscopic Method ISO 13366-1:1997 was used. At the end of this paper an analytical review is made based on the discussion of the main causes of the unsatisfactory results obtained for the two phases of the monitoring plan. Some recommendation are given which we consider necessary to improve the existing situation in milk producing farms, collecting points and processing plants as well.

Keywords: raw milk, microbiological criteria, somatic cell, micro flora content

Freshwater Coleopters in the middle flow of Shkumbin River

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In this article we present some results of the study of water coleopters (hard wings insects). They have an important influence (impact) on the environment and in food chains of animal creatures for their role in the decomposition of organic matter and especially fish food. They also are indicators of freshwater pollution. This study is realized during the year 2011-2012 in the middle flow of the river Shkumbin, from Elbasan to Librazhd. Methodology used consists in the ground expeditions in lentic and lotic habitats and also in laboratory study. Types of findings associated with systematic, bioecological and zoogeographical data. Provided data are for 17 species of coleopters finding in studied region.

Keywords: coleopters, systematic data, bioecological data, zoogeographical data, density, lotic habitat, lentic habitat

Microbiological analysis of water of river Lumëbardhi (Kosovo) during winter season

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The objective of this study is to assess the quality of water, of the river Lumëbardhi during winter season, 2012 year, through the microbiological analysis. River Lumëbardhë located in south - west part of Kosovo, who pass through the city Prizren. Samples for microbiological analyses are collected in three localities along the river. Microbiological analysed parameters are: Total coliform bacteria, SS (Salmonella and Shigella), Heterotrophic, Streptococcus faecalis and Fungi. According to the bacteriological analysis show that waters of river are polluted microbiologicaly. The river section examined during these investigation, demonstrate the lake water belongs to the second class of quality.

Keywords: technique, plate, microbiological, analysis, water

Microbiological analysis of water of river Valbona (Albania) in spring season 2012

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The aim of this study is to evaluate quality of water, through microbiological analysis during spring season of 2012 year, of the river Valbona, located in North East part of Albania, nearby city Bajram Curri and Tropoja. Samples for bacteriological, analyses are taken at four localities along the river. We analysed the Total coliform bacteria, SS (Salmonella and Shigella), Heterotrophic, *Streptococcus faecalis* and Fungi. According to the bacteriological analysis show that waters of river are not to much polluted microbiologicaly, belongs to first class of bonity.

Keywords: microbiological, analysis, filtration, membrane

Detection of organic pollutants in drinking water using capillary gas chromatography

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In this paper are presented concentrations of organochlorinated pesticides and polychlorinated biphenyls in drinking water samples of Tirana water network stations, groundwater and commercial water from markets. The samplings were realized for eight different stations in network stations, five groundwater stations and ten commercial waters in January 2014. Water samples were analyzed with capillary gas chromatography technique with ECD. The water samples were extracted with hexane, dried with anhydrous sodium sulphate and cleaned up in an open Florisil micro-column. Rtx-5 (30 mx x 0.33 mm x 0.25 um) capillary column used for separation of organochlorinated pollutants. The most frequently detected pesticide were DDT

metabolites, Aldrines and volatile PCBs. All the concentration levels of these chlorinated pollutants were below the EU Directive 98/83/EC.

Keywords: Organochlorinated pesticides, PCB markers, GC/ECD, water samples

Regulatory issues on genetically modified foods in Albania: a policy perspective

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Recent developments in food production and processing technologies have considerably enhanced man's ability to provide larger quantities and a wider variety of products. However, the recent development biotechnologies has also significantly increased controversy and dispute over the use of food and other goods derived from genetically modified crops instead of from conventional crops, and other uses of genetic engineering in food production. The dispute involves consumers, biotechnology companies, governmental regulators, non-governmental organizations, and scientists. The article reviews the regulatory measures and approaches taken by the government of Albania to assess and manage the risks associated with the development, release and use of genetically modified foods in the country. The review and analyzes is made in light of the processes for harmonization of Albanian's food policies and its legal and regulatory framework with the EU legislation and Acquis Communautaires. It identifies several important legal and regulatory issues and proposes necessary measures and mechanisms to be put in place related to identification and protection of the public interest and increased ability of consumers to be informed about the foods they eat.

Keywords: food biotechnology; food safety; regulation; genetically modified organisms

Albanian typical products as a tool towards sustainable rural development

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The turn of consumers towards quality, healthy and safe food products results in a new definition of quality that refers to: i). their geographical origin ii). their freshness and seasonality; iii) the environmentally friendly or healthy production techniques; iv). the producers themselves, since societal relationships play an important role between producer and consumer *(Buller and Morris, 2004)*. Thus, there exist certified agro-food products of a spatial character such as the Protected Designations of Origin (PDOs) and the Protected Geographical Indications (PGIs) and certified agro-food products of an a-spatial character such as the organic products *(Vakoufaris and Kizos, 2010)*. The main goal of our case study is the identification of Korça typical products, PDO and PGI potential products and their contribution to the sustainable rural development in order to designing the policy intervention framework in the future. This study is based on a structured survey with the: i.) farmers/producers (381

interviews), ii.) working personnel in various public agencies, iii.) the businessmen and businesswomen. Moreover, a number of secondary data by public agencies of Korça region, farmers associations, etc.), but also by University papers and studies and scientific journals have been used. A series of elements regarding perceptions and attitudes among consumers was measured, using basic descriptive statistics analysis to describe the responses of the sample under study. According to this study, most consumers prefer their products based on origin that brings to a conclusion that PDOs or PGIs, or Traditional Specialty Guaranteed (TSGs) must be promoted through a Public Private partnership.

Keywords: quality, food, PDO, PGI, Korça, partnership

Measles outbreak in a Roma community in Albania

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Background: Measles reporting is mandatory in Albania. Despite the very high immunization coverage for MMR a measles outbreak was reported by district epidemiologist to national public health institute in june 2006. All affected persons were from a Roma community living in the town of Elbasan. We report the epidemiological features of this epidemic. **Method:** Active surveillance was conducted and cases analyzed had to meet the national case definition "rash maculopapular with fever". The diagnosis was established by clinical signs, confirmed by serologic results. Sera samples from all the suspected cases were tested for Measles IgM by ELISA and molecular genotyping of virus by the regional reference laboratory. **Results:** According to the case definition 16 cases were actively found, 13 (77%) were female and 3 (23%) male. The mean age was 7.1 years (range: three months to 23 years). Most of the patients had Koplik spots, coryza and conjunctivitis. All cases were unvaccinated. All patients recovered and no fatal cases. **Conclusion:** Gaps of low vaccine coverage facilitated the measles infection to spread. The vaccination of this community it difficult despite the commitement of the health staff. Families with their children are in ongoing migration all over the country and abroad. As a response to stop the spread of the measles outbreak, the district epidemiological service in Elbasan with the support from the national institute of public health, organised a mass vaccination campaign.

Keywords: measles, outbreak, roma, vaccination

Serum osteocalcin as a specific marker of bone turnover in postmenopausal women

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The field of bone turnover markers has developed considerably in the past decade. Biochemical monitoring of bone metabolism depends upon measurement of enzymes and proteins released during bone formation and of degradation products produced during bone resorption. The aim of this study was to use osteocalcin as a marker of bone formation that allow a specific and sensitive assessment of the rate of bone formation of

the skeleton and study the correlation between serum osteocalcin level with bone mineral density (BMD) and age in postmenopausal women. A total of 60 postmenopausal Albanian women participated in the study. Subjects were divided into two groups: postmenopausal normal women and postmenopausal osteoporosis women. All subjects completed a questionnaire on life style factors. Height and weight were measured. Bone density was scanned using Quantitative Ultrasound (QUS). Serum samples were collected and osteocalcin levels were measured by electrochemioluminiscence (ECL) using Elecsys 2010. The Pearson correlation test indicated a negative correlation between osteocalcin levels and BMD. Serum osteocalcin levels was positively correlated with age which showed increase serum osteocalcin levels with aging. We observed significantly higher levels of serum osteocalcin in postmenopausal women with problems of osteoporosis compared to postmenopausal normal women (P<0,05).

Keywords: Serum osteocalcin, postmenopausal women, osteoporosis, bone mineral density

Coastal salt-marshes in Albania

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The salt marshes of Albania comprise a narrow belt along the Adriatic and Ionian Seas. They have been the subject of a range of human activities causing habitat loss. Enclosure for agricultural use, ports and other infrastructure has reduced many salt marshes to a narrow fringe along estuary shores. Salt marshes are important for a range of interests. In particular they support a range of specialist plant communities and associated animals (especially breeding and wintering birds) and often have a high nature conservation interest. They rarely exist in isolation and form an integral part of many estuaries, other tidal inlets and bays. The objectives of this study are flora and vegetation of salt marshes. In this study, on the basis of field surveys, is given a phytosociological classification of the Albanian salt marshes vegetation by the European standard methods of phytosociology (Zurich-Montpellier). The salt marsh communities of Albania are poor in endemism and generally similar to relevant vegetation types elsewhere in the Mediterranean. The flora of coastal salt marshes is differentiated into levels according to the plants' individual tolerance of salinity and water table levels. The flora of coastal salt marshes is differentiated into levels according to the plants' individual tolerance of salinity and water table levels. *Coastal salt marshes* of Albania are offered a number of 62 taxa, extended in 16 diverse families. The most presented families are *Chenopodiaceae* 24%, followed by *Poaceae* and *Asteraceae* with 11%. Salt marshes are populated by **halophytes**, plants that can live under saline conditions. Plant species diversity is low, since the flora must be tolerant of salt and anoxic mud substrate. The most common salt marsh plant communities in coastal area of Albania are salt meadows dominated by glasswort (*Salicornia europaea*), pioneer marsh communities, perennial vegetation of marine saline mud's mainly composed of scrub such as Sarcocornia fruticosa, *Sarcocornia perennis* and belonging to the *Sarcocornetea fruticosi* class, tall rush salt marshes dominated by *Juncus maritimus* or *J. acutus* (*Juncetalia maritimi*), halo-psammophile meadows mainly dominated by *Plantago crassifolia, Saccharum ravennae, Scirpus holoschoenus (Plantaginion crassifoliae)***.** The plant communities'composition of salt marshes area is rather variable depending on the nature of the soil. The development from constantly submerged areas and ending in areas that are always above water level is marked by the increasing diversity which follows the arrival of a range of new species**.** Coastal salt marshes rank among the systems with the highest productivity of any in the world. High productivity of salt marshes is just one reason we are protecting and restoring these valuable "liquid assets".

Keywords: plant salt marshes, flora and vegetation, Zosteretea Marinae, Arthrocnemetea; Juncetea maritimi; coastal vegetation; halophytes; phytosociological analysis

The palynomorphological characteristics of *Anthemis* in Albania

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The genus Anthemis L. is the second largest genus of the tribe Anthemideae of Asteraceae family. It comprises about 210 species, distributed widely in Europe, south-west Asia, north and north-east Africa and extending into extreme southern Arabia and tropical east Africa. The plants of genus Anthemis are annual and perennial herbs with beautiful and attractive flowers. The article includes the palynomorphological study of the main members of genus Anthemis in Albania. In this article submitted comparative features of the species: *Anthemis altissima, Anthemis carpatica, Anthemis chia, Anthemis macrantha, Anthemis orientalis, Anthemis tomentosa, Anthemis triumfetti*. The material for the study was obtained in national herbarium in Tirana. For the study of palynomorphological features are analyzed 31 pollen grains from each species. The treatment of material is made with acetolysis method and basic fuchsine. The fixing of pollen grains is made with glycerin gelatin. The study and photos of pollen grains are realized with light microscop with power 400x and 1000x. The pollen grains of plants above are oblate spheroidal, three furrows three pores. The exine appear thick and two-layer. The sculpture of exine is echinate. The work is part of the palynological study of general members in Asteraceae family in our country.

Keywords: Anthemis, palynomorphological, pollen grains, exine, spinules

The impact of nutrition on milk production and weight of newborn calves

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Milk production mainly from the caws varies in different areas of Albania. In field areas, productivity has grown as a result of the increasing number of caws, the increase in productivity and improvement of basic food. Feeding according to stages is a programme that includes herd feeding in time periods based on the milk productivity level, fat quantity in milk, food quantity consumed and the wight of the animal alive. Farm producers need to draft food rations in a way so that can fulfill animals need in each of these stages for an optimal production, to minimize or avoid metabolic anomalities, to increase animals lifetime and the profit from animal herd. The main purpose of this study is the usage of contemporary methods in the economic analyses of utilizing resources, materialized in small domestic farms. The study took place in "Agrotex'' farm in Lushnje district. The data was analysed and processed according to nutrition stages (1-up to 150 days of lactation, 2-over 150 days of lactation and 3-withering period) milk yield and calves weight on birth for a period of 6 years. In addition to nutrition stages, the data was analysed and processed also for milk yield and calves weight on birth. The study utilizes the method of approximation of undetermined variables to solve restriction systems, as well as Cobb-Douglas production function to analyse the impact of food portion components on milk production. This study proves that balance nutrition makes up for the primary factor to increase the effectivity of economic farms.

Keywords: optimal structure, milk production, nutrition, approximation with the method of undetermined variables, food portion

Cardiac markers in the acute myocardial ischemia

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The serum markers of myocardial injury are used to help in establishing the diagnosis of myocardial infarction. The older markers lost their utility due to lack of specificity and limited sensitivities. Among the currently available markers cardiac troponins are the most widely used due to their improved sensitivity specificity, efficiency and low turn aroundtime. Studies have shown that cardiac troponins should replace CKMB as the diagnostic 'gold standard' for the diagnosis of myocardial injury. In this study we examined the value of serum levels of cardiac Troponin T, serum CK-MB levels for detection of ischemic myocardial injury and risk stratification within 40 days in patients with acute myocardial ischemia with one speicemen taken 2-8 hours of the onset of symptoms. We studied 141 patients with a diagnosis of acute ischemic myocardial injury. The concentration of TnT and CK-MB is made on Coobas 6000 by a electrochemioluminescence and turbidometric methods. The median duration of the ischemic episodes qualifying the patients for the study was 4 hours. Chest pain was continuous in 51.8% and intermittent in 48.2%. Mortality within 40 days was significantly higher in these patients than in patients with lower levels of troponin T. The troponin T level was variable and most strongly related to 40-day mortality (chi-square=23, p<0,001) followed by CK-MB (chi-square=10, p=0,005). The cardiac troponin T level is a powerful marker useful in the diagnosis of infarction and in the identification of patients at increased risk of mortality and morbidity.

The protein NT-proBNP accurately predicts the risk in patients with cardiovascular disease

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NT-proBNP is a marker in the blood for BNP, a hormone that "goes up during times of cardiac stretch or stress". "When the heart wall is over-expanded by too much blood volume, or damaged by lack of blood flow to the heart itself, BNP goes up, and NT-proBNP along with it. "Aim of the study**:** To evaluate whether measurements of N-terminal pro-brain natriuretic peptide (NT-proBNP) can be used to differentiate patients with normal and reduced left ventricular ejection fraction (LVEF). **Methods:** Between March 2013 and September 2014, 120 patients above the age of 50 years with a Chronic heart failure, were invited to participate in the study. Blood samples were drawn between 8.00 am and 10.00 am. Samples were collected in prechilled tubes containing EDTA, and promptly centrifuged at 4°C. After separation, NT-proBNP were measured by immunoassay in Coobas 6000. **Results:** A raised NT-proBNP(≥ 478 pmol/l) identified patients with an LVEF. Concentrations of NT-proBNP increased with increasing age and with decreasing LVEF ($p < 0.05$). Obesity or treatment with diuretics, can reduce levels of serum NT-proBNP. Conclusions**:** A single measurement of NT-proBNP provides important information about LVEF patients.

Keywords: left ventricular ejection fraction (LVEF), natriuretic peptides, N-terminal proBNP

Cultivation of hazelnuts, variety Visoka, in Fier (Albania)

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The treatment of hazelnuts in ecosystem and their importance related to other nut trees. These trees can be grown in hard terrenes with little qualities, so this fact has made hazelnut favorable to cultivate in Mallakastra district. Botanic characteristics and the history of its development in the district. The arrival of variety "visoka" in Albania, the spread and priorities that it took, the adaption with phytoclimatic and terrene's factors. It is treated the problem of cultivation, the schemes of planting, the recomandation from current experience and the priorities. The agrotechnique that is used for cultivation and all relevant services, which are connected with development of this cultivar. Priorities' classification between planting in separated blocks and in plantation. The graphic of costs and the performance for each case. The cultivation's way in Balkan region and the comparisons with our country. The tables that present land qualities, which are recomanded according to the study about Mallakastra district. The graphic of land plots that are spreaded in the area. Also the chemical analyses of earth. The techniques of saplings production and given results. Marketing condition and the production priorities of this variety.

Keywords: treatment, cultivation, agrotechnique, quality, chemical, adaption, biotechnology

Antifungal activity of essential oils from Albanian medicinal plants

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Postharvest pathogens such as *Penicillium digitatum* (green mould) in citrus fruits cause great losses during storage. To achieve prolongation of their quality and quantity during storage and marketing different technologies are used. Fungicides used as pre and postharvest treatments are the main method to reduce losses from fungal pathogens in postharvest. Related to the application of synthetic fungicides there are many problems such as residues in final product and development of resistant strains of pathogens. Essential oils can be used as an alternative to synthetic fungicides aiming at partial or total replacement. In this study six commercial essential oils were tested for their activity in volatile phase against *P. digitatum* under *in vitro* and *in vivo* conditions. *In vitro* trials were conducted on inhibition of the colony growth (0.28 g/L air). Under *in vivo* trial the oils (0.52 g/L air) were tested in artificially inoculated pathogen in orange fruits. *In vitro* experiments demonstrated that essential oils of *Thymus* spp, *Origanum vulgare, Satureja montana* inhibited the colony growth of the pathogen (100% inhibition) after seven days at 24°C, while *Salvia officinalis*, *Laurus nobilis* and *Juniperus communis* promoted the growth of the fungus compared to control. The activity of essential oil was fungistatic. In our experimental *in vivo* conditions the tested oils of *Thymus* spp, *O. vulgare*, *S. montana* didn't show inhibitory activity. However, other methods of application (contact), better oil volatization or higher doses are needed to determine their inhibitory activity. Also a chemical characterization of oils is necessary to correlate it with the activity.

Key word: Postharvest, essential oil, *P. digitatum*, antifungal, volatile faze

Isolation, phagotyping and antibiogram of *Salmonella* spp from laying hens farm in Kosovo

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Salmonella it is important zoonotic pathogen and its prevalence in the animals act sa a continous threat to man. The present study was carried out to report the isolation along with the serotypes, phagetypes and antibiogram pattern of salmonella among poultry laying hens in Kosovo. In our study we included 39 laying farms, from 13 municipalities. We have collected 1363 samples, of which 197 samples faeces and 75 floor and fan dust samples, 1080 eggs and 11 samples from (liver, spleen intestines). Isolation and serotyping of Salmonella species, according ISO 6579:2002 method was conducted. From 19 farms are isolated 38 strains of Salmonella genus. We identified 2 serotypes of gender Salmonella, *S enteritidis* and *S bovismorbificans*. The phagotypig of S enteritidis was conducted according to the protocol of phagotyping. We identified 9 phagotype which are PT4, PT6, PT7, PT8, PT13a, PT14b PT21, PT29 and RDNC. We testing 30 isolates on antimicrobial sensitivity and resistance with Kirby-Bauer diffusion disk method according to CLSI standards, we used Mueller Hinton agar with different groups of antibiotics disc. The results was:gentamicin (Cn 10 mcg) S/100%, sulphamethoxazole - trimethoprime (SXT 25 mcg) S/100%, ampicillin (AMP 10 mcg) S/100%, oxytetracycline (OT 30 mcg) S/100%, ciprofloxacin (CIP 1 mcg) S/97%, I/3%, minocycline (MH 30 mcg) R/60%, I/40%, streptomycin (S 10 mcg) S/10% R/90%, amoxicillin (AML 2 mcg) S/14%, I/ 86 % cloxacillin (OB 5 mcg) R/100%. Our finding showed that the S. enteritidis was dominant serotype, and we found *S. enteritidis* was distributed among 9 phages type.

Keywords: Salmonella. serotyping, phagotyping, antibiogram, poultry

Some preliminary data for the presence of Q-Fever in humans in Western Macedonia

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The Q-Fever is a zoonotic infection which is caused by Coxiella burnetti and affects both animals and people. Our study aims is to determining the epidemiological situation of this infection in animals and humans in Western Macedonia. The study which was carry out in the virological laboratory of the FMNV, with the application of the ELISA test in humans, imported by SERION – Germany, provides data about its presence in humans. The serums have been collected from the regions where the presence of the infection in farm animals was studied. A total of 140 human serums, of which 66 female and 74 male were studied. 10 samples, 4 females and 6 males resulted positive; this positivity reaches at about 7.1%. The positivity has been based on the cut-off value, which is above 0.5 in the positive cases. The serums were collected from the region of Gostivar where positivity in cattle and sheep with a varying percentage based on respective sites was noticed. Persons resulting positive were aged between 20 and 87, and what is common in this case is that they mainly deal with farming. Among them there were also veterinaries. In our opinion, the positive people provides suitable conditions for contact with the animals. The living conditions in the zones covered

with the study are poor which represents a predisposing factor in the spread of the infection. Our data are based on the analyses provided by other researchers who say that Q-Fever in humans is an illness mainly present in the developing countries.

Keywords: Q fever, Coxiella Burnetti, human, serological, Elisa test, Gostivar region

Assessment of water quality of Buna River using microbiological analysis

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The Buna river is situated near Shkodra town, between the hill of Rozafa castle and Taraboshi mountain. It is the only emissary of the Shkodra lake. Buna river is exposed to different sources of pollution related to urban pollution, sewerage discharge, agricultural activity, and climate change which are associated with an increase in water levels, erosion and floods. This research assesses the quality of water in Buna river, based on the microbiological and physical-chemical analysis. Samples were taken at three different points during years 2013-2014. The analysis will stress out data about heterotrophy and fecal coliform general characteristics, figures, the role as indicators of water pollution and also information about pH, conductibility and the temperature of water. Microbiological contamination tests show relatively large water contamination, especially in the first sample point where Buna river begins. The high level presence of these microorganisms indicates that the water quality of the river is very bad according to standards, presenting a risk to health for all the organisms that inhabit the sweet waters of Buna river.

Keywords: Buna River, fecal coliform, heterotrophy, urban pollution, contaminate, water quality

Broiler performance fed on mash and pellets

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A total of 600 broiler chicks (ROSS-308) were randomly assigned into two analogous groups to one of two treatments: one of the group was fed on mash while the other one on pellet diet in the age duration of 21 to 43 days, aiming to compare the performance of broilers on two dietary groups. Both groups of chicks consumed the same feed ration/formula and were were housed in the same building in adjacent rooms, under same environmental conditions and access to feed and water. During the whole period of trial, both body weight and the gained weight resulted to be higher (with significant difference) to the group of chicks fed with pellet feed. A clear trend was noted towards the improvement of feed consumption per unit of gained weight of the chicks under the experimental group ($p \leq 0.05$). For the entire period of the experiment, the experimental group of chicks consumed 0.27g feed/g of live weight, or 9.64% less feed/unit of gained weight compared with the control group. Use of pellet feed influenced the improvement of the performance index to a level of 15,41%. The group fed on pellet feed during the trial period demonstrated the highest

values of PEF (19.69% more) and technical performance. The results of this experiment give an impression that pellet feed is better than mash one for the production of commercial broilers, applied for the age duration of 21 to 43 days.

Keywords: broilers, pellets, growth rate, live weight, mash feed

Lognormal distribution of *Toxocara canis* (n/e/g/f) at the street dogs

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Dogs (especially puppies) are the main carriers of *T. canis* which accidently can infect and humans. Larvas of *T. canis* migrate causing the syndrome of larva migration. Tirana is a developing country which favors the growth of street dogs especially in the peripheral part. The number of street dogs in Tirana is about 2300 (Ψ250). Most of the times they risk the health of children which lives near populated areas or parks. We have picked up more samples in populated areas than in less populated areas. The database was made from the first of December of 2012 to December of 2013 and it includes information from fecal of 67 puppies from 1 to 6 months, 62 dogs from 6 to 12 months and 69 dogs over 12 months. These samples were ekzaminated at Petlife Hospital, Tirana, Albania. A brief history regarding age, with examination and information where dogs mostly lived and fed were written down. All the information was processed from the statistic program S.S.P.S 17 for Windows.

Keywords: Lognormal distribution mean, dog, eggs, *T. canis*

Optimizing reproductive performance of herds Simmental breed of imported cattle

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Successful development of livestock farms that breed cows with high production capacities such as Simmental and Holstein breeds, an important role of manage genetic breed capacity import into future generations and management factors that constrain improvement of reproductive performance population. Importing a considerable amount of pregnant heifer Simmental and Holstein breeds from Austria, Germany, contributed positively to the addition of milk and meat production in our country. The study was conducted in Bio farm "Ramilli", Shijak-Durres, for the periods 2007-2011. We also included about 150 cows Simmental pure - breed for dual purpose (milk – meat). Birth of a calf annually for cow provides the optimal milk production that can only be achieved with the correct programs to monitor the events of reproduction. To optimize reproductive indicators for genetic capacity utilization cow is aiming in our study. We also included three groups heifer imported from Austria, and approach them in terms of the farm. Production of milk for the first lactation conducted three groups to 4994 ± 936.4, 4123 ± 817.3, 3750 ± 560 proven statistically differences between them ($p < 0.05$). Calving interval realized 421.7 ± 73.4, 396.5 ± 42.1, 386.6

± 43.7 days, the difference proven statistically ($p < 0.05$). Conception index 2.1, 1.7, 1.6. Improving reproductive performance in cows with higher milk production capacities, livestock farms achieved through unifying control period after calving.

Keywords: breed, calving interval, lactation, conception

Osmolyte and Proline accumulation and seed yield responses in *Zea mays L*. plant (Var: Sc.704) to water stress condition

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In recent study the effects of drought stress and irrigation in various growth stages on proline and osmolyte accumulation and seed yield was evaluated at Agriculture research center located in Arsenjan city in Iran, during summer 2013. A farm research was done in RCBD as split-plot with three replications. We considered water deficit induced in three growth stages; vegetative, reproduction and seed filling, respectively and three irrigation was carried out once the cumulative evaporation from Pan Class A come to 40, 70 and 100 mm. Results showed that proline and osmolyte contents increased by water stress. Seed and straw yield decreased 25% approximately, if water stress occurred after anthesis stage. Finally, highest and lowest seed yield at vegetative and grain filling stages once evaporation comes to 40, 70 mm with mean values (9 and 8 ton/h, respectively) were obtained.

Keywords: corn, compatible solutes, water deficits stress, Pan Class A, cumulative evaporation

Staphylococcus aureus in locally produced white cheese in Tirana market

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Cheese has nutritional value, its consumption is very common in Albania, but is also excellent medium for bacterial growth, source of bacterial infection, particularly when it is produced from raw poor quality or unpasteurized milk. Microbial safety of cheeses may be enhanced by usage good quality raw milk, pasteurized milk, following GMP in aim to prevent cross-contamination. The aim of this study was to evaluate the presence and amount of *Staphylococcus aureus* in white cheeses, produced locally. Totally 120 samples of white cheese, produced in small big plant at different Albanian district, by raw milk or pasteurized milk, were collected from Tirana market. All samples were tested by phosphatase test to determine whether raw milk or pasteurized milk it was used for cheese production. 53 out of 120 samples (44%) resulted produced by pasteurized milk, 67 out of 120 samples (56%) resulted produced by raw milk. The *S. aureus* was isolated in Baird Parker agar, and submitted to coagulase and API-staph test. Out of 120 cheese samples, 47 showed contamination by *S. aureus* coagulase-positive corresponding to 39.16%, otherwise 58 out of 120, 48.33% of cheese samples being contaminated with coagulase-negative strain of *S. aureus*. The occurrence *S. aureus* coagulase-positive in cheese produced by pasteurized milk and raw milk it was respectively 7 from 53 (13.2 %) and 40 from 67 (59.7%.). 10% of the samples demonstrated high levels

10^5- 10^6cfu\g of *S. aureus* coagulase-positive, suggested that white cheese, may represent a health risk for the consumers.

Keywords: raw milk produced white cheese, pasteurized milk produced white cheese, Albania, *Staphylococcus aureus* coagulase-positive

Frequency and characteristics of *Listeria spp.* in minced meat of Albanian retail market

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Listeriosis is the emerging bacterial zoonotic infections worldwide. Among the species of the genus *Listeria, Listeria monocytogens* is known as causative agent of humans and animals listeriosis. Information on the occurrence of *Listeria monocytogenes* and *Listeria* species is limited in the veterinary and public health sectors in Albania. The studies for *Listeria spp.* in the food in Albania belongs to the last ten years. This survey was conducted determinate the incidence of *Listeria spp*. in minced meat samples, collected from retail shops and supermarkets in Tirana. A total of 240 samples of raw minced meat (beef and pork mixed) were collected over 2010-2011 period, analyzed for the presence of *Listeria spp.* The standard techniques (ISO 11290-1, 1996) were employed for the isolation and identification of *Listeria* species, as well as biochemical identification system API-Listeria. Out of the total of 240 samples examined, 152 (63.3%) were found to be positive for *Listeria spp. Listeria* it was isolated during all year. *Listeria monocytogenes* was isolated in 72 (30%), *Listeria innocua* in 112 (46,6%), *Listeria seeligeri* in 8 (3.2%), *Listeria gray* in 4 (1.6%) of the analyzed samples. 28 (11.6%) out of total 240 samples showed a mixed contamination of the two, three species Listeria. This study indicated the high incidence rate of *L. monocytogenes* and other *Listeria* species in retail minced meat of the Tirana market. This highlights the possibility of Listeria spp or L.monocytogenes to persist in not cooked well minced meat preparation and raises the problem of illness for the public.

Keywords: raw minced meat, retail market, Listeria spp., *Listeria monocytogenes*, Tirana market, Albania

Study of biological properties of Newcastle disease virus, isolated from pigeons

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Newcastle disease is a viral infection, which can be a affected of all kind of birds. Pigeons also can be affected from this infection. The objective of our study is: from the clinical cases with Newcastle in pigeons to isolate and study the biological qualities of the virus. We tried to isolate the virus , from the pathological material of dead pigeons and after treatment in the laboratory, according to standardized methods. We inoculated the material from the dead pigeons in the allantoic liquid of the embrionated eggs, which were taken from birds not immunised and not infected from Newcastle. We used about 20 pigeon heads, from different places of our country, and we done 4 pools (one pool with 5 pigeon heads).From the four pools,

only from in one we isolated the virus. The biological properties of the isolated virus were: death of inoculated embryos, the level of haemaglutination with horse and turkey erythrocytes, the rate of infection according to the level (titter) of haemaglutination, thermostability of hemaglutinines, eluation. The data we received were: it don't agglutinate the horse erythrocytes, causes the embryos death 98 hours after infection, a very long time referring to the standard clon-30, his haemaglutinines are thermostabile for 20 minutes, comparing to 5 minutes for clon-30; eluation is low, pathogenicity in chickens is 0, so it cannot infect birds; the titter of virus in the embryos is about to 1:128 and the haemaglutinins titter is 1:64-1:256, three weeks after infection. We say that it doesn't caus pathology to the birds. From the genetic study of the virus, in Friedrich-Loffler Institute, it results that a PPMV-1 exists (newcastle of birds), which is similar with pi/USRI/166/2000 with the index of pathogenicity is 1.66, very low comparing to other newcastle virus. According to the above data we can say that we have isolated the newcastle virus from the pigeons.

Keywords: Pigeons, newcastle virus, pathogenicity, clon-30, biological properties

Frequency of heterosis in different cultivars of durum wheat

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Five cultivars and ten their F_1 and F_2 hybrids were tested for inheritance of quantitative traits To achieve this aim, the difference between mean values of each F_1 and F_2 trait were used. These values represent the loss of allelic gene interaction during reproductive process. Using a method different from standard methods, we have determined the parental general combining ability (GCA) and influence of allelic and non allelic gene interaction, that arise during hybridization. The results revealed that these values are negative or positive, influencing negatively or positively on traits value of progeny. When the values of allelic and non-allelic interaction are equal, but inverse sign, have not heterotic effect. Analyzing the results can see also, that between allelic and non-allelic gene interaction, for cultivars in this study, exist an opposite dependency , as you can see in their rankings. According to GCA, 5/11-1 cultivar had higher values of GCA, so it is better than others, to insure a better inheritance of traits.

Electrochemiluminescence – a useful technique to detect cytomegalovirus-Igm antibodies

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In this study is preliminary evaluated the Electrochemiluminescence technique for the detection of *Cytomegalovirus* IgM antibodies. Medical diagnostic is working to determine the most sensitive techniques for the detection of *Cytomegalovirus* antibodies, in the framework of which is developed this scientific work. *Cytomegalovirus*, a member of the herpes virus family, is ubiquitous in all human populations, causing infections which are followed by life-long latency in the host with occasional reactivations as well as recurrent infections. Transmission of infection requires intimate contact with infected excretions such as

saliva, urine, cervical and vaginal excretions, semen, breast milk and blood. CMV infections are usually mild and asymptomatic. A first step in diagnosing acute primary CMV infection is most commonly made by the detection of anti-CMV-specific IgG and IgM antibodies. Electrochemiluminescence technique (applied in Cobas 6000 instrument) is used for the detection of *Cytomegalovirus* IgM antibodies. The test principle used is μ-Capture with a total duration 18 minutes of assay. Samples being reactive for IgM antibodies indicate an acute, recent or reactivated infection. The assay of specific IgM is of great importance in the diagnosis of primary infection. During the evaluation, 50 typically anti-CMV IgM positive samples and 150 typically anti-CMV IgM negative samples were tested. Analysis of the results revealed a good sensitivity and specificity for Electrochemiluminescence technique. Anyway, for diagnostic purposes, the results should always be assessed in conjuction with the patient's medical history and other clinical examinations.

Keywords: Electrochemiluminescence, μ-Capture, Cytomegalovirus IgM

Parapeneus longirostrus stock in Adriatic Sea

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The stock of pink shrimp was assumed in the boundaries of the whole GSA18, lacking specific information on stock identification. In the southern Adriatic deep water pink shrimp is distributed mostly between 30 and 600 m depth although it is more abundant between 200 and 400 m depth. The eastern part the south Adriatic is characterized by high occurrence and abundance of the species, given the characteristics of the water masses (warmer and saltier). Pink shrimp is one of the target species of the central and southern Adriatic multi-species trawl catches. Nursery areas, but especially adult aggregations of females are mainly located in the eastern part of the GSA18, along the Albania coast, where a persistent spawning ground is localized. DataStandardized LFD abundance indices (N/km2), whole GSA18 (MEDITS data 1996-2012).Length structure of landings and production by fishing segment (for west side from DCF, for the east side within a pilot study in the framework of Adriamed project and from National Statistics). Are used models and software performed using VIT on 2008-2011 data.This year an attempt with XSA has been made, given that the time series covers the mean life span at least one time. Indirect methods: XSA (Extended Survivors Analysis).Estimates of growth parameters achieved using DCF data through the analysis of length frequency distributions and von Bertalanffy model. Production data: for Italy from 2007 to 2012 from DCF; for Albania from 2008 to 2011(National Statistics);for Montenegro from 2008 to 2011 2011(Pilot study). Albanian data have been adjusted to take into account that the export is the 64% of the total production (FAO Yearbook of Fishery Statistics).Given the results from this analysis, based on the whole information from the area, it is necessary to consider that a reduction of the fishing mortality is necessary. Can be gradually achieved by multi-annual management plan.Simulations will assist the results of different harvest scenarios.Most part (59.9%) of the total production in the GSA is exerted by the Italian fleet, while Montenegrin trawlers account only for about 2.5% of the F exerted on the GSA and Albanian trawlers of about 37.6%.

Keywords: *Parapenaeus longirostris*, nursery areas, stock assessment, abundance indices, trawl

Impact of gibberellin on grape production and quality

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This study has proven the influence of GA3 gibberellins acid in the grapevine cultivar Vlosh realized in the years 2011-2012. Doses 75-100-150 PPM of Gibberellins acid applied and analyzed for the scaling effect, the percentage of sugar, ripening speeding and grain size. Results confirmed the influence of treatments in accelerating the flowering and maturation compared to controls. Simultaneously improved commercial appearance, performance and % sugar, 0.6-4.2%, while ripening is accelerated to 18 days. Gibberellins affected and biometric indicators, the growth of the size of a grain, volumetric weight, etc., as a result of development processes biosynthesis. Phyto hormone in concentration 150 PPM improved the production, 15.7% versus control and induced ripening of grapes about 10 days.

Keywords: acid Gibberellin, cv Vlosh, biometric, ripening, production

Aquaponic systems as excellent agricultural research instruments in Albania

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Aquaponic systems are recirculating aquaculture systems (RAS) that incorporate the production of plants without soil. Recirculating systems are designed to raise large quantities of fish in relatively small volumes of water by treating the water to remove toxic waste products and then reusing the water many times. The accumulated metabolic by-products, like non-toxic nutrients and organic matter, need not be wasted if they are channeled into secondary crops that have economic value or in some way benefit the primary fish production system. We plan to use as secondary crops, terrestrial plants grown in conjunction with fish. This integrated system is referred to as an aquaponic system. The goal is to culture a vegetable that will generate the highest level of income per unit area per unit time. Culinary herbs are the best choice. We think that there may be also good potential for growing traditional medicinal plants in aquaponic systems, especially in Albania, which is one of the leading exporters of medicinal herbs in Europe. The aims and objectives of building an aquaponic system in the Agricultural University of Tirana are 1. to create an excellent scientific research environment inside the greenhouses, where the aquaponic systems can be equipped with all necessary monitoring instruments in order to evaluate the performance of several experiments that can be performed by PhD students under the assistance of technical staff members and 2. to establish a perfect scientific environment where new ideas may come out from the collaborations between PhD students, researchers and professors.

Keywords: traditional medicinal plants; recirculating aquaculture systems; hydroponic subsystems

In vitro plantlet regeneration through somatic embryogenesis and indirect organogenesis in pomegranate (*Punica granatum* L.)

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The present investigation relates to the study of *in vitro* regeneration of pomegranate (*Punica granatum* L.) which is an important fruit tree primarily for its antibacterial and antimicrobial attributes. The clonal propagation of pomegranate is usually done by cuttings and air layering which are time consuming and the number of plants obtained is few. Modern biotechnological techniques like micropropagation helps to produce large quantity of good quality, disease free, clonal plants that are true to type, in a shorter period and in limited space. For micropropagation purposes, initially were cultured zygotic embryos of two pomegranate varieties (spontaneous and autochthonous Devedishe). The new plantlets were regenerated in MS nutrient medium supplemented with plant growth regulators (mg l^{-1}) cytokinin BAP 0.5 and auxin NAA 0.1. In order to induce somatic embryogenesis, from these plantlets were isolated root segments, which were inoculated in B5 Gamborg medium supplemented with different concentrations of NAA, BAP, 2,4-D and kinetin. Cultures were highly responsive for callus production on medium supplemented with 1 mg l^{-1} NAA and rhizogenesis was caused in the plantlets regenerated via indirect organogenesis. Meanwhile the cultures inoculated in medium supplemented with 0.5 mg l^{-1} BAP and 2 mg l^{-1} kinetin showed better response for callus production and regeneration via embryogenesis. No response was revealed on explants cultured on B5 medium supplemented with 2,4-D. The embryo development occurred separately in medium supplemented with BAP and kinetin. After 3–4 weeks the regenerated plantlets were transferred to the greenhouse.

Keywords: somatic embryogenesis, callus response, MS medium B5-Gamborg medium, *Punica granatum* L

Microbiological quality and physicochemical parameters of two types of fermented salami during ripening

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The dry-fermented sausages, that have always been imported in Albania, have recently become the most consumed products. Today they are produced by some local factories. A large amount of the most representative raw fermented sausages, as "Hungary salami", "Cacciatore", and Milano", are manufactured at EHW meat processing factory. There is little information about the survival of food pathogens in different ripening stages of these new products. We controlled some lots of production to see aspects of quality. Therefore, the microbiological quality (*Salmonella spp., Escherichia-coli.*), nitrite, water activity (a_w), NaCl content and pH were determined in two types of fermented sausages during the ripening time from days 0 to 60. The temperature in ripening camera was 23°C for the first days of maturation and 14±1 °C during all days left. As a result *Salmonella* spp. and *Escherichia-coli* were not detected at any time. The mean value of

pH decreased from 5.80 to 4.80 in the first days and stabilized at 5.48. Nitrite levels were found decreased in slightly small residual levels. Water activity (aw) decreased slowly and generally correlated with air humidity in the ripening camera and the mean value changed from 0.96 to 0.85 aw. A significantly different correlation between the bacterial count and a_w values was found. The results indicate that the microbiological safety of fermented salami depend on the initial contamination level with food pathogens. The analysis was done at the ISUV and at the sausage manufacturer's laboratory. The differences in composition, size and fermentation/ripening process were determined among the two kind of produced fermented salami. The physicochemical changes that occurred were summarized in terms of decrease of pH-value, nitrite level, decrease of aw and increase of NaCl content. From the hygienic standpoint, it is important that *Escherichia-coli, Salmonella spp.* were not found in finished products. Sensory analysis of final products showed an overall acceptability of the products.

Keywords: food pathogens, fermented salami, nitrite, water activity, pH, NaCl *c*ontent

Effect of storage temperature on histamine formation in *Sardina pilchardus* and *Engraulis encrasicolus*

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Histamine formation in scromboid fish species as *Sardina Pilchardus* (Sardine) and *Engraulis Encrasicolus* (Anchovies) were measured in different storage temperature. Fresh fish caught off in Lezha and Durres coast were examined. A portion of dorsal muscle from each fish was analyzed immediately and two other parts were examined after storage in two different temperature 25^{o}C and 4^{o}C for 24 and 72 h. Enumeration of *TVC* and E*nterobacteriaceae* were analised in the respective temperature. The analyses were carried out by high-performance liquid chromatography diode array. Histamine concentration were higher than the Albanian legislation admissible levels for samples stored in at 25^{o}C. In fish stored at 4^{o}C, histamine was lower than the level established in the legislation but was higher in Anchovies than in sardines.

The evaluation of productive performances of a local rabbit population, reared in floor pens of different size

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The aim of research was to evaluate productive performances of a local rabbit breed population, grown in semi intensive system, in floor pens of different size (130x100 cm vs. 250x100 cm), in groups of 10 heads. The study was carried out in a rabbit farm of Berati district, which lasted from 2009 to 2010. In total 90 heads of rabbits (50 heads females and 40 heads of male heads), were used in this study. The rabbits divided

in groups of 10 heads each, were placed in floor pens. The feeding was similar to all groups (ad-libido). The productive indicators taken into account for each individual were; initial live weight (g), final live weight (g), live weight gain (g), average daily gain (g/d), feed intake (g.w.w), feed conversion rate (g.w.w/l.w) and carcass characteristics; slaughter weight, hot carcass weight (l h, g), reference carcasses weight, the front limbs weight, the rear limbs weight, the length of the carcasses, the weight of the head, liver weight, kidney weight, the weight of the heart, full gastrointestinal tract, weight trachea + esophagus + lung, esophagus weight, dressing percentage, reference carcass, total fat (g). The rabbits growth was favorable; It was noticed a slowdown of growing period of about 30 days, a deterioration of the average daily gain, respectively (from 30 to 23 g/d) and feed conversion rate (from 5.1 to 6.01 g w w/g l.w) but the could dressing percentage comparable to those grown in cages**.** Technical radius meat respectively (62.1% females and 60.7 males), reference radius, respectively 52.8 females and 51.3 males and lean carcasses 1-1.5% l.w In conclusion, the productive performances of local breed reared in floor pens of different size, resulted more matured and therefore more acceptable to the consumer, although it was observed a slowdown of growth period

Keywords: rabbit, floor pen rearing, productive performance, carcass characteristics

The degradation of the insecticide *Imidacloprid* in greenhouse tomatoes and an estimation of the level of residues

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A liquid chromatographic (LC) method using UV detection was used to study the degradation of imidacloprid in tomatoes grown in greenhouses. A liquid-liquid extraction with acetonitrile/methanol (60/40, v/v) and a cleanup step with Florisil were combined with LC to isolate, recover, and quantities the pesticide. Average recoveries obtained at spike levels of 0.03 and 0.40 mg/kg were 93.2-94.7%. Determination limits were 0.01 mg/kg. The experiment was conducted in the greenhouses located in Durres. Treatment was performed using Confidor WG 70 (*Imidacloprid*), an insecticide with a systemic action. The aim was to confirm the residue of *Imidacloprid* in tomatoes and to find the decline curve after the last application in minimal and maximal concentration, 0.25% and 0.5% respectively. Samples of tomato fruits were taken in an interval of 1, 3, 5, 7 days after the application. The degradation of *Imidacloprid*, in maximal concentration exceeds the allowed limit of 7 days, this is day of PHI, thus influencing harvest and marketing.

Keywords: Imidacloprid, Greenhouse Tomato, Pesticide Residues

Ampelographic evaluation of wild grapevine characters *Vitis vinifera* G. ssp Sylvestris in the Vlora's river valley

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The wild grapevine (*Vitis vitifera* G. Ssp Sylvestris) has been growing spontaneously for thousand years in Vlora's river valley. It has been growing in the forests and the villages located along this river, starting from

the low hills and ending with villages, located at approximately 600-700 m above the sea level such as Mesaplik, Brataj, Tërbaç, Vranisht, Kuç, Sevaster, ect. Observing the flower's character we concluded that 13% of the flowers are hermaphrodites, 41% of the individuals have a functioning male flower and 46% of the individuals have a functional female flower. The leaf has different dimensions starting from small to medium, it has 5 lobes, has a pentagon form and a smaller tail than the length of the grown leaf. Above the main venations there are no signs of anthocyanin pigmentation. The average length of the blade above the venation N_2 is 10.1/9.6=1.05. The grains contain 2-4 seeds with an average length of 4.85 mm and an average width of 4.5mm, the ratio length/width of the seed is 4.5/4.85 = 0.92. The pulp of the grain contains 44.5% cider, 21% sugar and 13.1% acidity in total. In the forests and the villages of Vlora's river valley, the wild grapevine is usually accompanied with other plants like, *A.unedo* L., *C.siliquastrum* L., *C. mas* L., *E. arborea*L., *I.aquifolium* L., *Q.cerris* L., *P.alba* L., *Q.frainetto* Ten., *P.spina-christi* M., *O. vulgare* L., W. pear, *J. oxycedrus* L., W.plum, Blackberries, W. rose,ect, and some herbaceous plants that typically grow in this area such as: *M.camomila*, strawberry, trefoil, rosemary , lavender, *B. perennis* L., ect.

Keywords: wild grapevine, character, propagnation coeficient, Vlora's Valley, population

The differences in the microbial numbers of the raw minced meat preparation during the shelf life of the product

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In this study we have examined the raw minced meat preparation,during the shelf life,in aim to see the differences in the microbial number during, the declared on the label,shelf life. The *APC* and *Escherichia Coli* were enumerated in 130 samples of raw minced meat preparation, by the respective Standard ISO methods. The first enumeration was checked on the date of production. The samples were stored in 2-4^{o}C according to the producers recomandation,and reanalyzed on the 7th day, on the 14th day and 2 days before the expired date. At the first examination for *E.coli* 32 out of 130 samples resulted without the presence;36 samples resulted with acount from 1.6x10^{2} cfu/g to 3.2x10^{2} cfu/g, 26 samples resulted with 3.5x10^{2} cfu/gto 4.9x10^{3} cfu/g, 36 samples resulted with a count from 1,3x10^{4}-2.1x10^{5} cfu/g.At the last examination made two days before the shelf life, 52 samples resulted with a count from 5.4x10^{3}-3.3x10^{5} cfu/g for *E.Coli.* Also it was determinated the *APC* on both temperatures where we took this results: in the produced day, 25 samples resulted with a count from 1.2x10^{1}-1.4x10^{2}cfu/g, 56 samples resulted with 1.8x10.^{3}-5.1x10.^{5} cfu/g, 49 samples resulted with 5.1x10^{5}-2.1x10^{6} cfu/g. At the last examination two days before the shelf life,56 samples was varied from 5.2x10.^{6}-6.1x10^{8} cfu/g for *APC* where the highest indicators,were belonged to meatballs stored in 4^{o}C. The analyses of the results obtained in last enumeration indicated a very increased number of microbial flora. This means that microbiological quality,and safety of the product isn't stable,during the shelf life and the processing establishment of Tirana needs to be improve the production technology and determinate the expiry date based on the study and research.

Keywords: *APC, E.coli*, during shelf life, raw minced meat preparation, Tirana establishments

Comparative evaluation of the effects of several polyphenolic extracts on porcine and bovine meat samples

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Chemical and microbiological deteriorations are principal causes of quality loss of meat and meat products during processing, and storage. Development of rancid odor and unpleasant flavor, changes of color and texture as well as lowering nutritional value in meat can be prevented by appropriate use of additives. Due to the potential health hazards of synthetic additives, natural products, especially antioxidants have been intensively examined as safe alternatives to synthetic compounds. Polyphenols are the natural antioxidants prevalent in fruits, vegetables, beverages (tea, wine, juices), plants, seaweeds, and some herbs and show antioxidative and antimicrobial activities in different meat and meat products. Thus, plant polyphenolic compounds can serve as potential additives for preventing quality deterioration or to retain the quality of meat and meat products. . Subject of this study have been porcine and bovine meat samples, which have been subjected to polyphenolic extracts, such as those from: tea, rosemary and oregano conserved in a timeframe of 1, 4, 7 and 10 days. Lipids oxidation degree of the samples of porcine and bovine meat treated with rosemary, oregano and tea polyphenolic extracts is lower than the control samples either in treated or not treated in 85°C samples while antioxidant activitie results higher. Lipid oxidation degree and antioxidant activity results greater in temperature treated samples compared to those in raw state.

Genetic diversity of *C. carpio* from Ohrid Lake estimated by four microsatellite loci

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Common carp (*Cyprinus carpio* L) is an important fish species of Ohrid lake. The aim of the present study was to evaluate the genetic diversity of common carp using microsatellite markers. A total of 30 individuals were genotyped for 4 microsatellite loci (MFW1, MFW6, MFW7, MFW18). All the microsatellite loci were polymorphic. A total of 84 alleles were distinguished. The allelic number varied from 19 to 23 with mean allelic number of 21. The effective number of alleles varied from 9.92 to 11.84 with a mean of 11.66. The observed heterozygosity ranged from 0.32 to 0.73 with mean value of 0.57. The loci were highly informative. The PIC values ranged from 0.89 to 0.91 with mean of 0.90, which shows that the selected markers are of good quality. The values of Shannon information index (I) ranges from 2.63 to 2.78. The population was not in Hardy-Weinberg equilibrium (HWE) for all of four loci. The mean expected heterosygosity value (0.91) was higher than the mean observed heterosygosity (0.57). The mean fixation index (F) over the loci was 0.37. A bottleneck analysis is carried out, which shows no recent bottleneck. Factorial Correspondence Analysis (FCA) shows a close relationship between individuals.

Keywords: common carp, microsatellite, heterosygosity, genetic diversity, polymorphic

Effect of dietary fatty acid profiles and physical activity on body weight and carcass weight in laying hens

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The effects of dietary fat sources on performance and on fatty acid profiles of egg yolks are well investigated in laying hens but not the effect on other physiological parameters. Purpose of the research is to investigate the effect of fatty acids profiles and physical activity on laying hens' body weight and carcass weight. Thirty six young Bovans Brown laying hens were used to determine the effect of treadmill exercise and dietary fat source (palm oil - PO, soybean oil - SO, linseed oil - LO) on body weight and carcass weight in laying hens. Results show that mainly dietary fat source affects weight of laying hens. The PO resulted in lower body weight. Hens fed with diet SO (rich in n-6 fatty acids) showed the highest body weight. There were no significant effects of exercise in a treadmill on determined characteristics. Observed interactions between dietary fat and exercise reveal that exercise can compensate negative side-effects of an increased metabolic activity for diets SO and LO, whereas, the unfavorable effects of a diet with a low content of linoleic acid (PO) cannot be equalized.

Keywords: Laying hens, palm oil, soybean oil, linseed oil, fatty acids

Screening of quinolone antibiotic residues in beef sold in Kosovo

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This study aimed to find the effects of quinolone antibiotics in beef used in three regions of Kosovo. Total numbers of 89 beef meat samples were collected randomly from local meat shops for analysis. Extraction and determination of quinolones were made by ELISA procedure. Among the beef samples, 14 (15.7%) of beef meat samples were positive for quinolones. The mean levels (±SE) of quinolones were found to be in average of 28.22 ± 1.11 μg/kg in samples respectively for enrofloxacin, ciprofloxacin and fumequin. This study indicated that some beef meat sold in Kosovo contains residues of quinolone antibiotics. From the evaluation of tested samples is found positive the presence of enrofloxacin in 6 (6.7%) beef meat samples and respectively for ciprofloxacin and fumequin in 3 (3,35%) and in 5 (5,6%) beef meat samples. Study results confirmed quinolone residues in beef sold in Kosovo as constitute and serious risk for public health. Use of quinolones in treatment of cattle diseases in Kosovo remain an effective method of diseases control but are considered a common way of residues in beef produced and sold in Kosovo.

Keywords: residue, quinolone, beef, meat, cattle, Kosovo

Rare and endangered species of Tomorri National Park, their convservation status

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This publication is being presented as part of a wider research study on the Flora and Vegetation of Tomorri National Park, located in the Central-South Albania. The area is characterised by diverse climate and geological conditions, which are clearly reflected on its rich flora and habitats. There is a high presence of rare and endangered species, mostly occuring on calcareous rocky habitats above the timberline, suchs as on screes and bare rocks crevices as much as on rocky pastures.

In those habitats, there are several typical alpine species, which have the western and southern distribution limit in Tomorri National Park (*Linaria alpina* (L.) Mill., *Thlaspi bellidifolium* Griseb., *Veronica thessalica* Bentham.). There are also many endemic species of the Balkan Peninsula (*Achillea fraassi* Schultz Bip., *Asperula doerfleri* Wettst., *Crataegus heldreichii* Boiss., *Pinus heldreichii* Christ, *Crepis baldaccii* Halascii *etc.*) as well as many subendemic ones, that shared their habitats between Greece and Albania (*Campanula hawkinsiana* Hausskn. & Heldr., *Centaurea epirota* Hal., *Edraianthus australis* (Wettst.) Lakusic, *Ptilotrichum cyclocarpum* subsp. *pindicum* Hartvig, *Herniaria parnassica* Heldr. et Sart. subsp. *parnassica* Chaudhri, *Lilium chalcedonicum* L., *Valantia aprica* (Sibth & Sm) Boiss. & Heldr., *Valeriana crinii* Orph., *Nepeta spruneri* Boiss. and *Viola albanica* Halacsy.). Certainly, the most important ones are the Albanian endemics, (*Euphorbia cikaea* F.K. Meyer, *Astragalus autranii* Bald., *Onosma mattirolii* Bald. and *Arenaria cikaea* F. K Meyer), from wich *Onosma mattirolii* Bald. and *Astragalus autranii* Bald., can be found only in Tomori Mt, particulary above the tree line of *P. heldreichii* forest.

There are also common plant species, with importance for the flora of Albania, due to their limited distribution within the country, like *Juglans regia* L., *Castanea sativa* Mill., *Quercus* sp. div., *Coryllus avellana* L. etc. and also endangered species of *Satureja montana* L., *Sideritis raeseri* subsp. *raeseri* Boiss. et Heldr., *Salvia officinalis* L., *Origanum vulgare* L., *Orchis mascula* L, *Gentiana lutea* L. etc.

Tomorri National Park, is one of the richest area in endemic species in Albania, which are seriously exposed to many human uncontrolled activities, such as querries, overgrazing, wood cuttings, uncontrolled religious celebrations etc. Considering this, conservation and preservation of rare, endemics and near endemic species in their natural habitat, is of a great importance.

Keywords: Tomorri National Park, biodiversity, conservation status, endangered and endemic plant species, distribution area.

Comparison of direct and indirect organogenesis during the micropropagation of endemic plant species *Forsythia europea* Degen et Bald

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Forsythia europea Degen & Bald. of *Oleacea* family (Albanian forsythia) is deciduous shrubs grown spontaneously in central and north Albania. It is a Tertiary relic. Their bright yellow flowers which emerge very early in the growing season before the leaves appear have a characteristic smell. These features enable

the use of Forsythia species as decorative plants. The aim of the study was to analyze the effect of plant growth regulators in different medium on direct and indirect organogenesis of this plant. The buds and leaf pieces were used as initial explants. The buds in proliferation stage were inoculated in two different nutrient media (MS and WPM) supplemented with cytokinin BAP (1 mg l^{-1}) and auxin NAA (0.1 mg l^{-1}). The same nutrient media were used in the subculture stage. The leaf pieces *in vitro* were inoculated in MS medium with BAP 10^{-5} M and NAA 10^{-4} M, while the meristemoid stage has requested the contrary ratio of cytokinin and auxin. The plantlets *in vitro* in rhizogenesis stage were treated with auxin IBA 1 mg l^{-1}in two variants with: common chelate Fe-EDTA or new Fe-chelate sequestrene. The best medium for proliferation and subculture stages appeared MS medium during direct organogenesis of shoot tips. The optimal micropropagation coefficient (3) in MS medium is stimulated by the development of adventitious buds in the presence of cytokinin BAP. The response of indirect organogenesis with callusogenesis involvement of leaf pieces was very low. The best root formation was achieved when generated shoots were transferred to MS medium supplemented with Fe EDTA. The presence of sequestrene NaFe-EDDHA in rhizogenesis medium did not stimulate root formation.

Keywords: *Forsythia europea*, micropropagation, buds, leaf pieces, MS and WPM media, cytokinin, auxin, sequestrene

Immature Embryo culture of walnut (*Juglans regia* L.) cultivars and histological features of *in vitro* leaves

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Embryo culture is used for micropropagation of walnut elite cultivars in Albania. Recently, walnut, as autochthonous fruit and forest tree with high economic importance, is included in endangered plants list (E). The research aim is detecting the most effective method of micropropagation. Cultivars were chosen from different regions (Librazhd, Korça, Përmet, Tropojë). Immature embryos were used as initial explants, isolated in June and transferred in DKW nutrient medium. Commercial DKW medium and also the mixed solution of macro-, microelements and other chemical compounds of this medium were used. In both cases, the plant growth regulators ratio (cytokinin BAP:auxin IBA) was 10:1. Antioxidants were added for reduction of polyphenols oxidation (ascorbic acid, polyvinylpyrrolidone) and / or inoculated explants were incubated in dark conditions for 24 hours. For "Korça" cv., histological characteristics of the leaf (stomata, trichomes) during *in vitro* growth were observed by "nail polish" method. First proliferation phase of immature embryos results in maximal survival percentage (60%) for "Korça" cv., whereas for other cultivars, this value varies from 40 to 44%. Based on biometric data (shoot and root length, leaves number) after the proliferation stage, optimal values are observed for Librazhd cv., especially Korça cv. has the highest number of the leaves. This last result also has effect in the maximum average micropropagation coefficient (3) in the first subculture. Leaves histological changes for *in vitro* Korça cv. indicate a simultaneous development of stomatal apparatus and glandular trichomes under growth factor influence.

Keywords: *Juglans regia* L., immature embryos, DKW medium, plant growth regulators, stomatal index, trichomes

Comparison of HPLC-DAD and lc–ms/ms for the determination and validation of pyriproxyfen in water solutions

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Pyriproxyfen is an insect growth regulator that affects the physiology of morphogenesis, reproduction and embryogenesis of insects. The molecule of pyriproxyfen bears little resemblance to endogenous insect juvenile hormone (JH) but it affects JH and ecdysteroid titers in a variety of arthropods. High-performance liquid chromatography with diode array (HPLC-DAD) method is a widely used method for the analyses of pyriproxyfen. Although the methods have been remarkably improved, the tandem mass spectrometry (LC–MS/MS) systems with significant advantages have gradually replaced HPLC-DAD in many analyses. The aim of this study was the evaluation of the two methods for linearity, the limit of detection (LOD), the limit of quantification (LOQ) selectivity and repeatability for the determination of pyriproxyfen in water solutions. Using HPLC-DAD the obtained LOD was 0.01 μg/ml with the LOQ of 0.03 μg/ml. The linearity was over 0.998 for the concentrations from 0.1 to 1.0 μg/ml with the repeatability RSD less than 11.7%. The LC-MS/MS method showed a high reproducibility, as evident in the RSD values for intra-day and inter-day variability being 1.0–6.8% and 2.0–7.7%. The LC-MS/MS method exhibits linearity (R^2>0.99) for the concentrations from 1.0 to 100.0 ng/ml with the repeatability RSD less than 12.7%. The obtained LOD and LOQ was 0.1 ng/ml and 1.0 ng/ml, respectively. The HPLC-DAD performed well in terms of various validation parameters, but showed a very high LOD and LOQ (considering low concentration level of pyriproxyfen used in mosquito treatment) compared to LC–MS/MS.

Keywords: HPLC-DAD, LC-MS/MS, pyriproxyfen, water solution

Identification of polymorphic variants of modifier gene *B2AR* (*ADBR2*) in patients with cystic fibrosis

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Mutations of CFTR gene are identified as the molecular basis of cystic fibrosis (CF) disease, but there are also other "modifier" genes that influence the clinical symptoms of the patients with CF. One of these modifier genes is *β2-adrenoreceptor* gene (*B2AR*). The aim of this study is the identification of polymorphic variants of this gene, Arg16 and Gln27 in Albanian CF patients, in order to elucidate possible relations with clinical signs of the patients. We analyzed 50 patients with CF, which have the same genotype for CFTR gene- delF508 homozygous. DNA was extracted using standard methods from 5 ml of blood samples with EDTA. To identify genetic variants of this gene we used AS-PCR method and gel electrophoresis.

Calculation of allele frequencies was done according to formulas in genetics of population. The method used for this study AS–PCR was very effective with high sensitivity and low cost. We found out that in Arg/Gly16 locus the frequency of Arg16 was 0,3 and the frequency of Gly16 was 0.7. Instead of Gln/Glu27 locus, the frequency of Gln27 was 0.61 and the frequency of Glu27 was 0.39. After genotyping of B2AR gene in both locus for each patient, we defined groups of patients with the same genotype. Moreover, we calculated the frequencies of various haplotypes (Arg/Gly16 – Gln/Glu27). In future we will analyze the relation between genotypes Arg/Gly16, Gln/Glu27 and certain haplotypes and parameters of clinical condition of the CF patients. Identification of polymorphic variants of modifier gene *B2AR* in CF patients could be useful in predicting clinical status of the patients and can help to perform differentiated treatments.

Keywords: *B2AR* gene, AS-PCR, allele frequency, CF-cystic fibrosis

Assessment of stilbene residues in cattle through analytical control in Korca region

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The use of substances having hormonal action is banned in Albania. However, sometimes forbidden drugs may be added to feeds for illegal administration or treatment to cattle for promoting increased muscle development or increased water retention and thus obtain an economical benefit. Residues of these substances may remain in meat and may pose a real threat to the consumer either through exposure to the residues. On this context use of stilbens as hormonal dugs in cattle is used in illegal way. Evaluation of stilbens residues in live cattle and beef meat samples remains a common objective of food control in Albania. Assessment of stilbene residues (diethylstilbestrol, hexerol and dienstrol) is carried out from 2012 to 2013 in 94 urine samples collected from cattle in region of Korca. Analytical control is performed by ELISA test as commercial product following the use instructions. Study results showed the positive results for stilben group of substances in 8,5% (8/94) of urine samples. Detection limit of ELISA test is respectively 0.1 ng/ml for diethylstilbestrol, 0.25 ng/ml for hexerol and 0.5 ng/ml for dienstrol residues. 6 out 8 positive urine samples for stilbens residues contained diethylstilbestrol confirming as well use of hormones in cattle treatment**.**

Study of antibodies sero-prevalence of classical swine fever virus in pigs with negativity of viral antigen in organs

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Classical swine fever (CSF) is one of the diseases that have caused major economic damages during the last decades. Although considerable progress has been made in the eradication and prevention of the disease, the threat for an epidemic still exists. Eradication measures in Albania are based on stamping-out in case disease is suspected and confirmed on pig holdings. Vaccination with 'conventional' live attenuated vaccine is used as an additional tool to eradicate the disease. The aim of this study was to evaluate sero-prevalence parallel

with the presence of CSF virus in domestic pigs. To realize it 1150 samples were collected, from 19 regions, which 150 organ samples were tested by ELISA Ag (Prio - Check - CSFV Ag), based on the principle of double antibody sandwich for early detection of viral proteins and identification of disease prior appearing clinical signs, and 1000 serum samples were tested by ELISA Ab (Prio - Check CSFV 2.0) for detection of antibodies against the E2 glycoprotein of the virus in serum. Control is aimed at rural areas, without excluding concentrated swine growth complexes. Testing showed no evidence of antigen in organ materials, whereas in 140 (14%) of serum samples we detect presence of antibodies against CSF virus. To evaluate this positivity is necessary a thorough analysis, taking in consideration the vaccination used in different parts of our country, as a measure to control the disease. Detection of antibodies does not necessarily mean that the animal is infected. Virus Neutralization Test (VNT) for CSFV antibodies is considered as Gold Standard, and is usually carried out in parallel with other pest viruses. To achieve this, 22 positive resulted samples were sent for confirmation of CSF in the EU Reference, Hannover, Germany, and within few days we will have the final results.

Keywords: CSF, ELISA Ab, ELISA Ag, VNT

Microbial water pollution of Drin River in Scutary area, Albania

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Black Drin River joining White Drin and some other small rivers form the longest river of Albania, Drin river, 335 Km long. Drin has two distributaries, one of which empties directly into Adriatic Sea and the other one into Buna river, in Scutary. The Drin area is beautiful and very important for the Albanian economy, for the electricity and has a large agriculture activity as well. Unfortunately mismanagement of agricultural practices and the discharge of industrial and urban wastes into the river are causing a high pollution. River conservation is threatened by pollution. Drin river water is used by people for fishing, swimming and irrigation of plants and the pollution of this river is a problematic issue in environment and human health. We monitored microbial and chemical water pollution of Scutary area of Drin, where Drin goes into Bojana, during 2012-2013 and a high water pollution level was recorded.

Keywords: Microbial pollution, Coliforms, Fecal coliforms, CFU, Drin, Bojana

Optimizing water treatment practices for the removal of actinomycetes and earthy odor in water of Bovilla reservoir

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Bovilla reservoir, which is situated 15 km North-East of Tirana the capital city of Albania is one of the major hidrotechnical works of this country. This reservoir is a warm monomictic water body and stratifies higher in the summer season. The predominant trophic state of Bovilla reservoir is oligotrophy., From autumn 2001 this reservoir repeatedly manifests an unpleasant taste and odor which is defined as musty-

earthy. Taste and odor control has become an important issue for drinking water suppliers worldwide. Consumers react very sensitively to changes in the organoleptic quality of their drinking water. The reason is that odour compounds and the present a very low threshold of perception (10–20 ng/l). The Bovilla Water treatment plant treats 1800 l/s raw water taken from Bovilla reservoir, using oxidation, coagulation flocculation, sedimentation, filtration and disinfection process. In cases of bad odour powdered activated carbon (PAC) is added at the rapid mix section. Throughout the monitoring period were done :quality and sensory analysis of raw water on a weekly frequency, analysis of treated water after coagulation, laboratory scale experiments using different doses of chemicals, applying optimized doses in full scale and PAC adsorption experiments. The aims of this study were: to predict the PAC doses required to treat water of Bovilla reservoir containing bad taste and odour, to establish the removal efficiency of taste and odour by three types of activated carbons with different iodine number and to assess the impact of NaOCl and other chemichal in the treatment process of the plant in removing actinomycetes and bad odour. Results have shown that traditional treatment processes are usually inadequate in removing taste and odour and optimization of plant practices is required. Powdered activated carbon (PAC) can effectively remove taste and odour when the correct dose is applied.

Keywords: Bovilla reservoir, water treatment plant, actinomycetes, taste and odor,powdered activatet carbon

Findings on genetic diversity in cultivated *Salvia officinalis* using molecular markers

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Albania continues to be a significant supplier of the wild Medicinal and Aromatic Plants of which Sage remains the major export item accounting for about 70% of the total sage imports to the US in 2013. Fifteen Sage plants were randomly picked from three different cultivation sites in Albania (North/Koplik; Southeast/Strenec and South/Libohove) in order to screen genetic diversity amongst them employing Randomly Amplified Polymorphic DNA markers using twenty decameric oligonucleotide primers. A total of 2129 DNA bands were generated of which notably clear and scorable were 1555 (from 150 to 1999bp). Primers produced between 63 and 156 bands per Sage plant with an average of 107 bands per primer. Cultivated Sage plant generated between 112 to166 DNA bands with an average of 133 bands per plant. DNA banding patterns, obtained from the Shimadzu Multina PCR-RAPD analysis, were quite polymorphic and were used to carry out hierarchical cluster analysis using the between gropus linkages employing Ward method of SPSS v19. The dendrogram showed a clear bifucraction splitting the North cultivated Sage from the South (southeast and south) group due to (dis)similarity in climate and soil structure/texture. Southeast cultivated Sage plants exhibited some genetic diversity within the group. This study indicates that RAPDs were fast and easy to use and proved to be reliable and efficient discriminatory tools detecting a high level of polymorphism within the same species (intraspecific level) which is explained with ecological variation (geographich origin) and genetic make-up of each individual (intrinsic factors).

Keywords: Sage, cultivation, Albania, RAPDs, hierarchical cluster analysis

Monitoring the water microbial parameters of some lakes of Lura Park

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Lura Park with surface of 1,280 hectares is located in northern Albania, in the eastern part of the massive mountain Lura Crown. This park has 14 glacial lakes, located at the height of 1350-1720 meters that create a colorful and attractive environment. In winter these lakes are covered by ice. The largest lake is the Great Lake with an area of 32 hectares. But in almost all the lakes the natural balance is broken, as a result of demographic changes of region and usage without any criteria of the vegetation around the lakes. Disposal of inert materials and solid waste, as well as those of liquid in many water environments of Lura, has damaged their appearance and quality. It is appreciated the quality of some lakes of Lura in different points, with microbial parameters in determining the total number of microorganisms (HET) and the presence of coliforms and by comparing them with international norms allowed for surface waters. The results obtained, showed low levels of coliforms in the water lakes, which is within the limits allowed. The greater this contamination was observed during summer, and less in the winter.

Keywords: Lura Park, Lura's lake, HET, total coliforms, Water fecal contamination

The effect of hybrid and mechanization used on Maize grain yield

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Maize yield figures in Kosovo indicate nearly 50 percent lower than the agro climatic condition offer. This is due to traditional farming practices and mechanization, utilization of less yielding varieties, application of less productive fertilizer types, little or no use of herbicides. The maize yield was analyzed for 10 commercial hybrids in a location near Klina in Kosovo. In the study was investigated the effect of mechanization for soil preparation, sowing, plant maintaining and harvesting on maize yield. Also were analyzed plant height, spike weight and height, number of leaves, power and intensity of germination and their effect on grain yield. During the maize production period, plant was irrigated three times. The maize grain yield of Pregia – 12,68 mt/ha, Colombo – 11,85 mt/ha, and Florencia – 11,20 mt/ha, were higher than other hybrids BC 418 – 10,52 mt/ha, BC 408 – 10,20 mt/ha, BC 394 – 9,88 mt/ha, Jumbo 48 – 9,96 mt/ha, NS 640 – 9,65 mt/ha, NS 444 – 9,80 mt/ha, ZP 704 – 9,10 mt/ha. Our results indicated that with use of modern production technology, proper mechanization and adequate hybrids, the maize grain yield can be much higher compared to the maize yield reached by local farmers in Kosovo.

Keywords: Maize yield, maize hybrids, mechanization

Comparative study of Putrescine foliar spray on growth, physiology and yield of wheat under different type of soil conditions

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The effect of polyamine putrescine on growth, physiology and yield of wheat crop was studied both in field and wirehouse condition. Experiment was conducted in naturally saline sodic field (EC= 4.7 ds/m) at Soil salinity Research Institute Pindibhatian and compared with un-stressed field (EC= 0.4 ds/m) at Quaid-e-Azam University Islamabad. Pots experiment was carried out at Quaid-e-Azam University Islamabad in sterilized soil and 150mM NaCl was applied twice (after 7days and after 14days of seed germination) in water to maintain EC = 3.7 ds/m and it was compared with unstressed pots (EC= 0.3 ds/m). Aqueous solution of putrescine @ 0.241g/L was applied to plants of both fields and pots twice after 14days and 30days of seed germination Sampling for growth and physiological parameters was done at early vegetative stage (after 57 days of sowing) and at maturity (after 160 days) for yield parameters. Results showed that putrescine foliar spray increased growth (plant height, fresh weight) chlorophyll and yield both in stressed and un-stressed condition of pots and field being more pronounced in un-stressed condition. Putresine foliar spray improved proline, sugar and antioxidant activities was both in stressed and un-stressed condition being greater increase under stress condition.

Keywords: aminoacid application, saline sodic, salinity,crop production, polyamine

Protostrongyloidosis in lambs in the district of Elbasan, Albania

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This study was carried out to determine data about lungworm infestation in lambs in the district of Elbasan, Albania. Qualitative and quantitative examinations were carried out for each individual through Baerman technique. A total 47 lambs were examined for protostrongyloid infestation in the autumn. The faecal examination showed that the most widespread kind of lungworms was Dictyocaulus filaria, which was found in 19% of examinated lambs. The representatives of the family Protostrongylidae were found in 17% of the controlled lambs. Prevalence of infestation by the prostrongyloids of the lambs, fluctuated from 21.5% in the lowland area to 25% to hilly area, in 5.9% in the mountainous area. In totaly the species of protostrongylidae parasites were identified as follows: Cystocaulus nigrescens in 8.51%, Muellerius capillaris in 4.25% , Protostrongylus rufescens in 2.12% and Neostrongylus linearis in 2.12% of examinated lambs. The routine control in autumn and the application of routine dehelminthics schemes, especially when environmental conditions favor the increase of infestation level, might keep infestation at levels that do not damage condition and production in lambs.

Keywords: lambs, lungworm, protostrongyloids, species, Elbasan

Analysis precipitation regime, period dryness and climate risk determination for agriculture on Albanian territory

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Agriculture is one of the most interested sectors in climate studies, because the agriculture activity is very sensitive to meteorological yearly progress as temperature and rain falls. Studying the dryness effects present of yearly periods is with a special interest in agriculture, because many plants are autumn and spring sowing and they feels the stress conditions that it is due to lack of rainfall. Repiting long drought periods combined with other reasons can cause potentially serious damage to water resources (IPCC, 2001). Adding to this conditions of climatic changing situation which according to numerous studies conducted on climate change and its effects, have shown an increasing trend in the values of average temperatures and a decrease in amount of rainfall which is evident on Mediterranean region and in Albania too (UNDP, 2005). Evaluation of ecological factors particularly determining the climatic dryness periods of the year, becomes more difficult when these assessments are made for local spaces. For the territorial planning of agricultural systems purposes and their management on local conditions, especially in dry and semi-dried areas, takes a significant determination of dryness year periods with which it is closely related the crop production. This study aims at determining the periods of dryness of the year in Albanian conditions, studing it closely linked with the expected climate change in the agricultural interest areas.

Keywords: climate, agro-clime, temperature, precipitation, drought period

Age composition and growth parameters of bleak (*Alburnus alburnus alborella*) population in Shkodra Lake

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Bleak (*Alburnus alburnus alborella*, de Filippi, 1844) is an endemic species and one of the most important commercial species of Shkodra Lake. Its catch makes 60-70% of the Lake's total production. The study aimed to investigate the population status of bleak in the Albanian part of Shkodra Lake by using some biological factors as age composition and sizes, condition factor, growth parameters, growth performance and mortality. The samplings were made by catch. The total length data were composed together as a single time collection and grouped into 1 cm length classes. The growth curve for bleak population was estimated from the relative position of the modes in a single length frequency sample. The von Bertalanffy growth parameters for bleak population were estimated as $K=0.43\ yr^{-1}$; $L_\infty=20.7$ cm; $W_\infty=80.5$ g; $t_0=-0.03$ yr. Based on growth and mortality data of the population, some considerations on fishing effort are presented in order to ensure the sustainable exploitation of the reserve.

Keywords: bleak, growth parameters, mortality

Detection of pathogenic *Vibrio parahaemolyticus* in Butrinti Lagoon shellfish

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Given the considerable public health implications, monitoring of *V. parahaemolyticus* in shellfish is crucial. The 50 shellfish samples from Butrinti Lagoon showed bacteriological parameters, *Salmonella* and *E. coli*, according to Commission Regulation EC No. 2073/2005 on microbiological criteria for foodstuffs. In particular, Salmonella was absent in 25 g and *E. coli* <230/100 g of flesh and intra-valvular liquid. The PCRs performed on enrichment broth from each sample gave positive results for *V. parahaemolyticus* in 45/50 shellfish samples. The TDH virulence factor was detected in 15/45 samples only, whereas TRH factor was not highlighted at all. The results confirmed the need for a specific shellfish inspection plan to detect the presence of Vibrio species and viruses in order to eliminate public health risks associated with shellfish consumption

Keywords: Shellfish, V. parahaemolyticus, *E. coli*, Salmonella spp

Determination of anthocianins in bilberry (*Vaccinium myrtillus* l.) in North East Albania

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Bilberry (*Vaccinium myrtillus* L., Ericaceae family) is a perennial subshrub and very important plants resource in North of Albania. The fruits of the bilberry are recognized for their bioactive properties and distinctive aroma and flavour. In the present study, the fruits collected from 10 different mountain regions of North and North East of Albania were analysed in order to determine their quantitative and qualitative features. The total amount of biologically active compounds in fresh fruits, were identified by LC-ESI/MS and their individual antioxidant capacities were evaluated by on-line HPLCABTS. To data, 32 anthocyanins and flavonoids compounds have been isolated and identified from the fruits of *Vaccinium myrtillus.* The total amount of anthocyanins (%) varied from 0.15 to 0,51. Higher amounts of total phenolic and total anthocyanins (0.51% and 1027.1 mg 100 g^{-1} dw) were detected in population collected from Laver Dardh zone of Puka district and the lowest amounts were detected in the population of Vermosh area of Malesia e Madhe district.

Keywords: *Vaccinium myrtillus* L., North of Albania, anthocyanins, phenolics, flavonoids

Does the *bluetongue virus* circulate in cattle population of Mat district, Albania?

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Bluetongue is a viral, infectious, non-contiguous, vector transmitted disease of ruminants animals, caused by an *Orbivurus*. Despite the disease is not zoonoses, it is with high economic importance and as other OIE listed disease, significantly interfere with animal trade. Clinically, most affected species are sheep, however cattle are the main reservoir of infection and play major role on epidemiology of disease. Presence of Blue tongue disease proved only when it is based on laboratory tests. **The aim** of this study was to investigate presence of Bluetongue disease in cattle in Mat district by evidencing specific antibody against blue tongue virus. . Randomly selected 180 sera blood samples collected from healthy cattle in Mat districts were tested. At the Infectious Disease Laboratory of Veterinary Medicine Faculty the samples were tested for the presence of BTV antibodies using a competitive enzyme-linked immunosorbent assay (c-ELISA) (bluetongue antibody test kit, IZSA&M, Teramo, Italy). According the ELISA test, 28 out of 180 (15.56%) sera samples were positive for specific antibody against Blue tongue virus. The bluetongue virus is circulating in cattle population in Albania. Further study are underway in order to estimate prevalence of disease at level of national cattle herd and determining the specific Bluetongue serovar circulating in cattle.

Keywords: Bluetongue, ELISA, infectious, surveillance, non-contiguous

Variation of leaf and acorn characteristics of hungarian oak (*Quercus frainetto*) in Central Albania

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Have been studied three populations of Hungarian oak (*Quercus frainetto* Ten.) to determine if exist morphological variation in leaf and acorn characteristics. For this aim have been evaluated 12 leaf characteristics and 7 acorn characteristics. Biological material has been collected from 29 trees. 10 leaves and 30 acorn for each tree have been measured. Descriptive statistical analysis, analysis of variance and three multivariate analyses (Cluster analysis, Principal component analysis, Discriminate analysis) have been used to evaluate the differentiation between populations and trees. This study told that exist essential differentiation for some studied characteristics. The leaf blade length, width of biggest lobe, acorn length had bigger impact on the differentiation. Taking account that exist essential differentiation we suggest the extension of study in other zones to arrive better conclusions for the conservation of genetically resources of Hungarian oak.

Keywords: population, *Quercus frainetto*, cluster analysis, morphological leaf variation, principal component analysis

Study of wheat genetic variation in base collections

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The aim of this study was to investigate the main morphologic and biometric parameters, and the production index, in 20 wheat accessions (*Triticum aestivum* L.), from the base collection of the Genetic Bank in Albania. The studied morphological parameters were: plant height (PH), spikelet for spike (SS), grain weight per spike (GWS), spike weight (SW), 1000 grain weight, days to maturity (DM). Collected data indicated that genotypes present significant differences for PH; the number of SS, there is a high difference of GWS (g per spike). High differences were presented for days to maturity (DM). Also some genotypes have high protein content (12-15.2%) and the gluten content with an average 21.6-35.6%. Results taken were analyzed for relations between characters in wheat genotypes. Hierarchical Cluster Method was used to observe relation and distance among genotypes. The collected data by this study will be as additional information for Gene Bank and to be used in the plant improvement programs.

Keywords: accessions, base collection, Cluster method

Stability of wheat genotypes in condition of Lushnja region

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The aim of this research is the selection of most suitable wheat cultivars for the region of Lushnja. Ten new cultivars and six know cultivars (three local and three foreign) were planted in this area in 2012 and 2013. The experiments were implemented through the randomized block scheme, with three repeats. The climate conditions presented remarkable difference between the two years of the testing. The year 2012 conditions were suitable for wheat development. On the other hand, the year 2013 was characterized by unsuitable conditions. The main indicators studied were the morphologic ones, the phenologic phases and the biometric parameters such as: Plant height, Spike length, grain per spike, g1000 kernel weights. The average difference of production between the two years is 18%, while the difference of the biannual difference reached at 50%. The variance analysis was calculated for each year of production (tha, -1) and for each cultivar. From the analysis it was shown that nine cultivars are above the average production level. The most stable cultivars for the two years of study were G08, G07 and G02. The interaction between cultivars x years presents different levels for yield stability. The comparisons for all couples were implemented using the Tukey-Kramer HSD Method. The positive values show the couples that present verified differences.

Keywords: Cultivar, randomized block scheme, variance analysis

Morphological characterization of pea (*Pisum sativum* L.) genotypes stored in Albanian genebank

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Study for characterization of genetic diversity present in the pea germplasm stored in Albanian genebank was carried out in the Experimental Field of Agriculture University of Tirana during three growing seasons (2010, 2011 and 2012). The study analyzed 12 local pea (*Pisum sativum*) genotypes of different origins for 23 quantitative morphological characters and had the objective to characterize and select those with favourable characteristics for use in breeding programs. ANOVA, PCA and cluster analysis reveal considerable extent of diversity, and the association among different traits. Most of the quantitative morphological characters showed significant differences among important agro economic traits. Cluster analysis for morphological data divide the whole pea genotypes into three groups in respect of genetic diversity and similarity among pea accessions of different origin. Relationships analysis between the morphological characters and pea genotypes using Principal Coordinates' analyses show that there are nine morphological characters with larger values in PC1 that account for 57.4% of total variance. The study identifies traits with agronomic interest which account for genetic diversity and the demarcation of distinguishable morphological groups which will facilitate the maintenance and agronomic evaluation of the collections.

Keywords: Genetic diversity, pea genotypes, morphological characters, clusters analysis

Spontaneous skin canine tumors: toluidine blue stain detection of mast cells in tissue section

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Dog mast cell tumor **(MCT)** is common in dog. The etiology of canine MCTs is unknown, but it is probably multi-factorial. Its incidence is higher than it has found in human. There are demonstrated several common biological and clinical characteristics in both species. Cutaneous mast cells are located in the dermis and hypodermis. The objective of this study is to detect of MC on Toluidine Blue stained slides. There were examined 74 dogs of difference breeds and aged, from Tirana city. Six of them demonstrated the skin canine tumors. Skin samples were obtained from these animals. Macroscopic examination of the tumor revealed nodular ulcerated lesion with areas of necrosis and hemorrhage, accompanied with normal superjacent epidermis and annexes. Serial sections obtained from biopsy specimens were processed with toluidine blue staining pH 4.5, specific for MC identification. This study suggests that Toluidine blue, pH 4.5 stain may give a good information about skin tumors in dog, histologically with benign behavior.

Keywords: cutaneous, mast cell, dog, neoplasm, toluidine blue

Growth parameters of shellfish from Adriatic Sea in Butrinti Lake

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Butrinti lagoon is situated in the southern part of Albania. It is the only lagoon connected with the Ionian Sea and due to the specific rocky shore of this sea. The water temperature varies with depth and season. In depth 8-10m it is nearly stable throughout the year, respectively 15-17°C. Eutrophication and depth influences ecology and fisheries of Butrinti Lagoon. Due to the depth of 21m, the water in the lagoon is stratified in different layers according to different gradients of temperature, salinity and chemical compounds.There are some factors that define these critical issues in the lagoon. Recent assessmentsfounded that, in summer there is a risk of hyper-eutrophication, when bacteria breaking down organic matter become hyperactive in the heat and available oxygen in the process. In anaerobic conditions the sediments release hydrogen sulphide, which is highly toxic for flora and fauna and can kill populations beyond the point of possible recovery. Stratification process makes that in the deep layers when thermocline and chemiocline are created, the oxygen is consumed very rapidly and big amount of H2S is. As it seems to be the water ecosystem equilibrium in the lagoon is very fragile. Methodic: Are transferred samples shellfish from Shengjini to Butrinti produced. Samples transferred from Shengjini to Butrinti.analyzedsamples mussels at period December 2012 - march 2013, august-September 2013. From analyzes had these results: Growth positive rate from analyzed samples mussels at December 2012 and march 2013. During the period of summer August–September 2013 the measurements have shown that there has been no increase in length mussel , argued that the death of her massive of the critical condition. In August analyzes, mussels predominate until 6.7 cm, and is currently fully curb the growth of mussel. Indicators of circles to represent dynamic growth rate of mussel growth in the period from April to June.

Keywords: shellfish, anaerobic conditions, samples, chemical compounds

Contamination with *Escherichia coli* of fresh butter produced by cow's milk in Kosovo

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Processing of milk, some of them may produce undesirable effects and some micro-organisms produce food infections carrying the pathogens that will increase the likelihood of infection of the consumer`s food. Contamination of milk and milk products is largely due to human factor and unhygienic conditions. Fresh butter is usually contaminated with different kinds and levels of pathogens. In Kosovo fresh butter is produced in home conditions and sometimes in not appropriate hygienic conditions. Sixty two butter samples were randomly collected from different localities of Kosovo for the isolation of *E. coli* a notorious contaminant. All the samples were inoculated on different bacteriological media and a number of biochemical tests were performed for the confirmation of the isolates. The results revealed that out of 62 fresh samples 22,5% (16/62) showed growth of *E. coli*. The highest number of butter samples contaminated

with *E. coli* is recorded from butter samples obtained from vending shops and houses. Among the 16 butter samples showed growth of *E.coli* the highest rate of contamination was found in butter samples collected in Ferizaj region. 5 butter samples collected in Ferizaj or 8% showed the values of *E. coli* from 10 cfu/g to 100 cfu/g.

Bioecological study on the outburst of millipedes populations (Class *Diplopoda*) around the water pumping station of Konjat, Lushnje

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The object of this study is the population outburst of two millipedes species (Diplopoda, Myriapoda), *Anoploiulus apfelbecki* (Verhoef 1898) and *Pachyiulus varius* (Fabricius 1781). It is observed in the vicinity of the water pumping station of Konjat village, supplying drinking water to Lushnje city. The used methodology was based on sampling and extracting millipedes out of the same volume of soil (10 cm x 10 cm x 10 cm) at equal distances in a plot of 20 m x 20 m. The number of individuals and the population biomass result very high in the sampling area around the water pumping station: from 1.48 ind/l (Apr 2011) up to 3.87 ind/l (Sep. 2011) or 647 ind/m^3 (Apr 2011) up to 1,705 ind/m^3 (Sep. 2011). The terrain typology (soil category, presence of underground water table at very shallow depth) and the presence of organic pollutant sources such as sewerage channel and livestock manure at close distance, are among the primary reasons for the observed outbursts. Lab test shows little effect on population control by using pesticides such Cipermetrine, Deltametrine, Willotrine and Caotrine). Due to very strict sanitary and hygiene requirements for this facility, the study recommends a combined solution for physical and chemical control of the millipedes population in the territory around the drinking water pumping station.

Keywords: millipedes, population outbursts, population control, pesticides

Preliminary results of stevia plant (*Stevia rebaudiana*)

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The study was conducted at the Research Base near the center of the transfer of agricultural technologies Fushe - Kruja, during the period 2013-2014. The objectives of this study were, recognition with biomorfologjin of the growth and development of Stevios plant in conditions of our country. The study device consists of 30 plant pots planted with the STEVIAS. Indicators obtained in the study were: time of planting, the beginning of growth, plant growth height in cm, number of brothers, number of branches in the main branch, the average number of leaves, total number of leaves. Planting was realized on 20 February 2013, followed by the onset of growth on 3/25/2013 to 3/04/2014, baking and harvest in September 5-10 October. At the end of the production these results were taken according to the study indicators. The height of the plant was carried 71.53 ± 11.08 cm, this on dependency of feeding conditions and illumination which

according to requirements of this plant is one of the most dominant factor. The average number of brothers per branch is to 10.6 ± 2.4, which indicates a high potential for stevia plant production. The average number of leaves per branch is 48.13 ± 9.26, and with a total leaves of 517. 03 ± 176.25, which are quantitative harvestable indicators of plant. Weight of plant was conducted at 49.46 ± 4.987gr.

Keywords: time of planting, the beginning of growth, height growth, number of brothers, number of branches

Comparison of finishing pigs cold yield between the genetic of pure breed of Great White (Yorkshire) Pietren and their crossbreds

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The study was carried out in collaboration with the Regional Agriculture and Rural Development Directorate specialists of Elbasani within the 2012-2013 periods. The objective of the study was: the assessment of the radius meat of different pigs' breeds and crossbreds: Great White (Yorkshire), Pietren and crossbreds of Pietren X Great White (Yorkshire) (♂ X ♀). The experiment's animals consisted at a total of 136 effective leaders respectively: 50 heads of Yorkshire, 27 heads of Pietren and 59 heads of crossbreds' have been: live weight of pigs before slaughtering, hot slaughtering weight. Live weight of pigs was estimated as the difference12 hours weighing between meals which means when the body was empty with food. Cold Yield was estimated by the ratio: (cold carcasses weight/live weight) x100. Cold weight was rated as a hot carcass weight discount 2.5-3% presenting the carcass with or without blood. The database was processed statistically using ANOVA. Results of the study are as follows: the genetic type of Great White (Yorkshire) represented by 50 heads, has had an average of the cold yield 74.9% (STDEV., 3.086); the genetic type of Pietren represented by 45 heads of 74.2% (STDEV 1.932) and the genetic type of crossbreds Pietren Great white (Yorkshire) (♂ x ♀) resulted 75.4% (STDEV. 3.043).

Keywords: radius, live weight, carcass, pig, genetic type, slaughtering

Pesticide residues in organic cultivated and wild-collected medicinal plants of Albania

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Pesticide residues in environment are found in soil, water and plants due to the extensive use of pesticides for agricultural purpose. The residues of pesticides in medicinal plants are of high concern as they are toxic for human life since these plants are used for medicinal purposes. The objective of current study was to estimate the presence of pesticide residues in some organic cultivated and wild-collected medicinal plants in Albania during the years 2010-2013. The determination of pesticides residues in medicinal plants was achieved by using extraction of plant material with organic solvent, clean up procedure and followed by

detection with chromatography techniques. Among the detected pesticide residues in the wild-collected plants as *Malva sylvestris, Fragaria vesca, Bellis perennis* were DDT (0.001 – 0,092 mg/kg), Dimethoat (0,011 – 0,22 mg/kg), Pirimiphos-methyl (0,0050 – 0,91 mg/kg), Chlorpyriphos-ethyl (0,006 – 0,24 mg/kg) Carbendazim/Benomyl (0,012 – 0,053 mg/kg), Acetamiprid (0,020 – 0,049 mg/kg), Diphenylamine (0,027 – 0,045 mg/kg). Whereas in the cultivated medicinal plants as *Calendula officinalis, Centaurea cyani, Salvia officinalis, Sideritis raeseri*, the most common detected pesticide residues were Dimethoat (0,011 – 0,22 mg/kg), Methomyl (0,021 – 0,16 mg/kg), Chlorpyriphos (0,006 – 0,24 mg/kg), Pirimiphos-methyl (0,0050 – 0,91 mg/kg), DDT (0.001 – 0,092 mg/kg), Carbendazim (0,012 – 0,053 mg/kg). The presence of pesticides in medicinal plant is related to the past use of pesticides as DDT and actual use of pesticides like Dimethoat, Pirimiphos-methyl, Chlorpyriphos, Acetamiprid, etc. Therefore, the quality of medicinal plants can be evaluated through estimation of pesticides residues in medicinal plants and comparison of the obtained values with acceptable limit values.

Keywords: medicinal plant, organic production, pesticides, residues

The influence of the structure of the common carp and grass carp population on the growth and cyprinid polyculture production indexes

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The experiment is done in cultivation plant of cyprinid fish family in Klos, Elbasan, during March 2012-May 2013 (14 months in total). Two ponds are used to do the test, each with a surface of 0.3ha. Stocking was done with one year olds. We have applied two structures of ponds population with five species of cyprinid family, the control polyculture and the test polyculture. The analysis of data for grass carp showed that in the control polyculture the "b" intercept value was 2.9778, thus a negative allometric. In the test polyculture the value of this index was b=3.2106 (r = 0.928), thus a positive allometric. In the two polyculture variants applied in this study, the "b" values coefficient in the length-weight relation for "common carp population" resulted to be negative allometric. For the control polyculture the value "b" calculated was 2.6762 (r = 0.981), whereas in the test polyculture this index had the value 2.924 (r = 0.984). The value of this index for the bighead carp grown in control polyculture was 3.0914 (r = 0.978). This number is found in the interval between the isometric value (b = 3.0) and allometric positive values (b>3.0 up to 3.5). For the population of bighead carp grown in test polyculture the value of "b" was 3.3708 (r = 0.987), thus a positive allometric. For the population of silver carp cultivated in control polyculture the "b" value was 3.0554 (r = 0.960), whereas for the silver carp grown in the test polyculture the "b" value was 3.1037 (r = 0.974). The final medium weight of common carp in the test polyculture was 141g greater compared with the polyculture. The difference of medium weight between two variants for bighead carp was 257g, for silver carp 204g and for grass carp 149g, always in favor of the populations included in the test polyculture.

Keywords: common carp, bighead carp, silver carp, grass carp, control polyculture, test polyculture

Variation of essential oils and agro-morphological traits of *Origanum vulgare* L. in South of Albania

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Rrigoni (*Origanum vulgare* L., Lamiaceae family) is a perennial evergreen subshrub native to the Mediterranean area. Leaves collected from this plant are used in traditional Albanian medicine, as a very popular spice in culinary, and as a well-known as a folk remedy in Albanian traditional medicine. Different agronomic traits along chemical variation of essential oils compounds of 9 populations of *Origanum vulgare* L. collected from areas in south of Albania during 2013 were studies. Essential oil obtained by hydro-distillation was characterized by gas Chromatography and Mass Spectrometry. The populations varied highly in yield of essential oil content ranged from 0.37 to 3.19%. Morphological and chemical variation studies of populations showed a revealed a high variability of most traits: Height of plant, flower colour, trichome density, yield, leaf/stem ratio, compounds content, carvacrol, thymol, different sesquiterpene composition, a high linalool content. The high variation of essential oil content, and also of agronomic traits seem influenced by the climate's thermal efficiency and also show the needs further investigation.

Keywords: *Origanum vulgare*, Albania, population, essential oil, agronomic traits

Peculiarities of wheat leaf disease distribution in coastal area in Albania

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Septoria leaf blotch (*Septoria tritici)*, brown rust (*Puccinia triticina)* and powdery mildew (*Blumeria graminis)* are the most important wheat leaf diseases in costal area in Albania. Observations were done every weak starting from tillering till milk ripening in wheat production fields. It was carried out in "Kaloshi" farm in Grabian village, Lushnja the district of Fier in year 2011. Based on the data obtained during surveys conducted to determine the most frequent air diseases of wheat in the low coastal area, Lushnja, for 2011, we can say that: First affections from the powdery mildew (*Blumeria graminis)* of wheat was observed since the first survey, March 15, with a level of disease incidence 3%, and then during the middle of April disease incidence from diseases, was 12%. During the beginning of April were observed Septoria leaf blotch (*Septoria tritici)* disease incidence by 5% and then at the end of May to the maximum value of 25%. Brown rust (*Puccinia triticina)* on leaves was observed in mid-April at the extent of 2%, where at the end of May reached the maximum value of 23%. Changes in disease epidemics were determined and showed the differences between the analyzed diseases.

Keywords: Wheat, brown rust, septoria leaf blotch, powdery mildew, disease incidence

Approximation of Albanian legislation with the EU food and feed Acquis

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After a series of food and feed crises during the years 2000, and a progressive update of EU food safety regulations addressing several deficiencies, Albania has continued to adopt that new legislation in its own domestic laws. In this framework, EU Regulation No. 178/2002 with general principles governing food law, has been fully transposed, setting up the Albanian Food Authority and laying down major procedures in food safety matters. For a long time now, Albania has made serious efforts towards the harmonization of its legislation, to align it more with that of EU member states. Albania has been trying to establish new legislative standards, and its actions are in compliance with the EU regulations and directives. Core legislation on food safety, feed and veterinary, are some prerequisites that Albania should meet in its way towards EU. In addition to adequate policies to better enforce the current food and feed legislation, it is worth mentioning a full reforming and streamlining of institutions in the framework of functional food safety. The institutional structure for food safety and veterinary services has changed significantly over the recent years to meet new adequate standards and requirements. Experts, working with the harmonization of this legislation, provided for high food and feed safety as well as animal welfare standards. As a candidate country Albania should accept all acquis communautaire before joining the European Union. Currently, Albania is undergoing the process of harmonization, approximation and transposition of EU regulations and directives into the domestic legislation. These new game rules make the process of European integration safer, since EU standards and principles are fully inserted into domestic legislation.

Keywords: Legislation, food, feed, integration, harmonization, approximation, acquis communautaire

Implementation of new technologies in wood industry and their effect in wood products quality

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There are about 300 companies producing furniture and about 200 small and medium enterprises (SME) producing sawn timber, which operate in the field of wood industry in Albania. This wood industry production is being challenged by the increasing demand in the domestic market, ranging from kitchen furniture to office and schools furniture, bedroom furniture, doors, windows, and saw timber in different dimensions. The production from the wood industry can fulfill about 80-85% of the domestic market demand. The remaining 15-20% of domestic market needs in wood furniture are afforded by import. Small entities do not make serious investment in technology. Big enterprises such as Ardeno in Tirana, Biçaku in Durres, Shaga in Tirana, Ital-wood in Elbasan, Dafinori in Shkoder, etc., have made remarkable investments in their technology. They have installed several mechanized lines of production. So, Ital-wood has invested in a mechanized saw timber production line; Bicaku in wood panels coated with PVC lines; Dafinori in a wood handrail production technologic line; Ardeno in wooden chairs production technologic lines, and Shaga in the production of furniture with particle panels. These enterprises are using modern numerical command machines, vacuum presses for gluing PVC, cutting equipment for panels with laser ray, finishing

lines with electrostatic field, modern lines of pneumatic transport for wood dust etc. These investments in new technologies have increased the quantity and quality of native wood products.

Keywords: wood, furniture, timber, market, company, technology, investment

Using public health surveillance data to monitor the effectiveness of brucellosis control measures in animals

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The current brucellosis control program in small ruminants consists in two major components the first is an intervention strategy through modification of host resistance by vaccinating the entire small ruminant's population using live attenuated Rev-1 strain of *B. melitensis.* The second is a post vaccination monitoring and surveillance system (MOSS) to monitor the efficacy of the mass vaccination. The MOSS is based on sampling vaccinated animals between 20 to 40 days post-vaccination and testing through Rose Bengal Plate Test in order to detect antibody presence and evaluate the vaccination sero-conversion and coverage. Rose Bengal test is recommended for screening of samples to determine flock prevalence and like other serological tests it cannot discriminate between natural infection and vaccination antibodies. The methodology used in the post vaccination MOSS during the mass vaccination campaigns of 2012 and 2013 demonstrated much strength upon which future MOSS should be built. However, the current system has also shown gaps in terms of missed opportunities to analyse information generated from other sources. Trends of disease in accidental hosts like humans have not been integrated within post vaccination MOSS. Given that the infection level cannot be estimated in small ruminants, data generated by public health surveillance system can be able to give an independent overview of the impact of the vaccination campaign. This paper will address in depth this issue by showcasing the value of integrated surveillance data in monitoring the success of brucellosis control measures in small ruminants as a one health approach in practise.

Keywords: one Health, Brucellosis, monitoring and surveillance system, small ruminants

Powdery Mildew (*Sphaerotheca pannosa* var. rosae)

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Disease Powdery Mildew caused from pathogen Sphaerotheca pannosa is one of the most problematic diseases in horticulture, which in all countries of the world causes major financial losses in trades of Horticulture. In our country in Kosovo and in Albania, growth surfaces cultivated with this decorative plant is growing every day more and more while farmers are so concerned with the cultivation of large losses grew because of exactly the occurrence of this disease in cultivars market requirements. In our experimental thesis work during 2013 vegetation we have diagnose the presence of pathogenic *Sphaerotheca pannosa*. We have also identified the time of infection in untreated susceptible cultivars. In samples taken in leafages,

we diagnosed the symptoms characteristic macroscopic forms of white mold and leafages such I have sent to identify labortor reproductive organs pathogen-conidia. Making their size measuring microscope (length and width) expressed in microns square. Taking samples from ten leafages and flowers on each trunk, twice during the vegetation, has enabled us, to determine the degree of vulnerability in the leafages and flowers. The results are presented in tables and graphs appropriate for producers to contribute a little bit of this field who ensure the existence of rose cultivation.

Keywords: disease, pathogen, infection, diagnosis, symptoms

Antioxidant effect of the polyphenolic extracts of rosemary, oregano and tea on the lipid oxidation degree of porcine meat samples

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Antioxidants are used to minimize lipid oxidation in various foods, including meat and its products. Antioxidants can act as metal chelators and free radical or oxygen scavengers, which can slow the progression of lipid oxidation. Lipid oxidation may have negative effects on the quality of meat and meat products, causing changes in sensory attributes such as color, texture, odor and flavour, and nutritional quality. Several synthetic antioxidants have been used to successfully prevent lipid oxidation in the meat industry, but consumers are concerned about the health risks related to consumption of some synthetic antioxidants. Therefore, there has been a growing interest in natural antioxidants. Nowadays, compounds obtained from natural sources such as grains, oilseeds, spices, fruit and vegetables have been investigated to decrease the lipid oxidation. Subject of this study have been porcine meat samples, which have been subjected to polyphenolic extracts, such as those from tea, rosemary and oregano conserved in a timeframe of 1, 4, 7 and 10 days. TBA (thiobarbituric acid) assay shows that polyphenolic extracts tend to increase oxidative endurance of meat sample, while DPPH assay shows the level of antioxidant activity of the extracts in the meat samples. The samples which have been subjected to tea polyphenolic extract shows a lower lipid oxidation degree and a higher antioxidant activity compared not only to control samples but also to the samples treated with the other polyphenolic extracts. Lipid oxidation degree and antioxidant activity results greater in temperature treated samples compared to those in raw state.

Allelic frequencies of a microsatellite locus in three populations of brown trout (*Salmo trutta*)

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A microsatellite locus was genotyped in three populations of brown trout (*Salmo trutta*), from rivers of the Florence province (Italy), Valbona (Albania) and Lepenci (Kosovo). A total of 90 individuals were genotyped. Microsatellite locus Str 60 Inra was ampyfied using polymerase chain reaction PCR. Fragment length of PCR products have been analysed in Licor 4300 DNA Analyser. There were identified 18 alleles for population of Florence (Italy), 10 alleles for population of Albania and 18 alleles for population of

Kosovo. The mean observed heterosygosities value Ho, 0,222, was lower then expected heterosygosities He 0,675. Microsatellite locus was polymorphic.

Keywords: microsatellite, allele, observed heterosysozity, expected heterosygozity.

Effect of nitrogen fertilizer levels on the grain yield, qualitative and technological indices of *Triticum aestivum* L.

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Experiment was conducted to determine the effect of different nitrogen levels on five bread wheat varieties (*Triticum aestivum* L.). The experiment was laid out in randomized complete block design, having four replications, plot size of 10 m^2. N doses used were 0, 50, 100, 150 and 200 kg/ha. The grain production of each variant was analyzed for the following traits: grain yield, thousand kernels weight, test weight, protein content, wet gluten content, sedimentation (SDS), as indirect indices of the quality of bread. Results showed that increasing N fertilizer resulted in increased of all analyzed indices. Grain yield were statistically similar at doses of 150 and 200 kg N/ha. However, dose of 200 kg N/ha, significantly increased the protein, and wet gluten content. Likewise were studied and several other indices that were related directly with bread-making quality like as alveograph indices (W and the ratio P/L). The data showed that these indices have been improved significantly by increasing the quantity of N used, which inevitably improve bread quality.

Keywords: Bread-making quality, grain yield, protein content, wet gluten, sedimentation, hectolitre weight, alveograph indicators

Chemical, fatty acid composition and texture of Lucanian sausages during ageing in relation to the use of nitrates

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The Lucanian sausage is produced by processing a mixture of belly fat (5-15%) and coarse-grained pork meat obtained from the shoulder seasoned for 30 days. The traditional processing method is based on the use of very low amounts of nitrates (<250 mg/kg) in order to improve the shelf-life. The total removal of preservatives would be worth in terms of wholesomeness and healthiness. The study was carried out in order to assess whether the complete removal of nitrates would affect sausage quality over time with regards to texture, chemical and fatty acid profile. Sausages were evaluated at vacuum storage and also after 3 and 6 months. Fatty acid composition was determined by gas chromatography. Texture Profile Analysis was performed on sausage slice and cube (1 cm^3). The total removal of nitrates did not affect the chemical composition of the sausages. However, the fat content lowered markedly ($P<0.01$) during ageing (range 35.54-31.69%). The fatty acid profile was not significantly changed by the addition of nitrates. Globally, the

use of nitrates reduced (P<0.05) the concentration of saturated (4501.76 *vs* 4750.13 mg/100g sausage) and monounsaturated acids (4957.64 *vs* 5100.50 mg/100g sausage). Nitrates increased significantly springiness (3.17 *vs* 2.80 mm; P<0.01), cohesiveness (0.84 *vs* 0.82) and gumminess (36.23 *vs* 23.82 N; P<0.05) of the cube. Sausages with nitrates showed a two-fold increase of chewiness (114.70 *vs* 66.66 Nxmm; P<0.001). In the present study the addition of nitrates mainly affects only the texture of sausages. As for the effect of ageing, the best sausage features may be detected up to 3 months after vacuum package storage.

Study on morphometric traits of the Albanian bees

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19 morphological features, measured on 3600 worker bee samples collected from twenty different regions of Albania were used for the identification and characterization the Albanian bee. The measurement was done using Scan Photo technique (SPT) and Photoshop program, in accordance with the standard method. The average values of the measured parameters were: Proboscis length (PL)(6.55mm), Forewing length (FWL)(9.32mm), Forewing width (FWW)(3.195mm), Hind wing length (HWL)(6.481mm), Hind wing width (HWW)(1.847mm), Femur length (FL)(2.575mm), Tibia length (TL)(3.212mm), Basitarsus length (BL)(2.094mm), Basitarsus width (BW)(1.217mm), Number of hooks (HA)(20.558), Sternite 3 longitudinal (LS3)(2.776mm), Wax mirror of sternite 3 longitudinal (WL)(1.344mm), Wax mirror of sternite 3 transversal (WT)(2.390mm), Distance between wax mirrors of sternite 3(WD)(0.321mm), Tergitite 4 longitudinal (T4)(2.092mm), Tomentum (TOM A)(0.782mm), Width of the dark stripe between tomentum and posterior rim of tergite 4 (TOM B)(0.507mm), Length of hairs on tergite 5 (HLT5)(0.290mm) and Cubital index (CI)(2.779mm). Referring to the values of coefficient of variations, features can be classified into two groups: (i) PL, FWL, FWW, HWL, HWW, TL, BL, BW, HA, LS3, WL, WT, T4 features with low level of variation (2.1-6.0%); (ii) FL, WD, TOM A, TOM B, HLT5 features with a high level of variation (12.2%-36.7%). CI is feature with moderate variation (15.3%). The observed values of the above parameters show that, although during the last twenty years the genes migration processes in the Albanian bee population have been uncontrolled, their classification into the group of *Apis mellifera carnica,* continues to be a significant hypothesis.

Keywords: Honeybee, *Apis mellifera*, morphological features, scan photo method

Evaluation of the purse seine with light attraction and mid-water pelagic pair trawl fishing methods on the quality of anchovies (*Engraulis encrasicolus,* Linnaeus, 1758) catches.

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Two fishing methods used in Albania for anchovies: purse seine with light attraction and mid-water pair trawling fishing methods. The purpose of this paper is to compare the quality of anchovies (*Engraulis encrasicolus*, Linnaeus, 1758) catches from different fishing methods. The data for this paper are taken on

board of fishing vessel Mare Adriatik (on 15 and 31 October 2013) that uses purse seine with light attraction fishing methodand Rozafa 13 and Rozafa 14 (on 13 January and 22 February 2014) that use mid-water pair trawling fishing method.On board of fishing vessels is registered the entire fishing activity, and data are taken for the temperature from the moment of capture up to the processing plant.A number of different randomly selected individuals are used to assess different levels of damage to skin, fins, and presence of blood on skin, on eyes and on gill cover. By comparison, the data shows that the level of damages on individuals, in both cases taken in this study are at comparable levels. So: no visible marks on skin are in 94% and 100% of individuals of purse seine fishing with light attraction method and in 95% and 100% for mid-water pair trawling fishing method.No blood on skin in 98% and 93% of individuals of purse seine fishing with light attraction method and in 95% and 100% of individuals of mid-water pair trawling fishing method. The data for crushing in fishing gear or during loading of fish shows no damages in 82% and 91% of individuals, visible crush damages in 16% and 1% of individuals and the 2% and 7% of fish is totally damaged (not for food production) in purse seine fishing method. In mid-water pair trawling fishing method the results shows no damages in 85% and 87% of individuals, visible crush damages in 14% and 13% of individuals and the 2% and 0% of fish is totally damaged, not for food production. Temperatures from fishing vessels up to processing plant provide interesting data. In the case of the Mare Adriatic temperature ranges from +2.1 to+3.3 degrees, while in the case of Rozafa temperatures ranging from -0.4 to -0.5 degrees. Selling price in the first case was about 2.3 euros/kg and in the second case, the prices were from 4.5-6 euros/kg.

Identification of E and M alleles of *κ-Casein* gene by DNA analysis in four Albanian Goat Breeds

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The aim of this study was the application of a molecular method, effective and at low cost, analysing DNA by PCR-RFLP protocol, in order to identify genetic variants of the *κ-casein* gene, CSN3. This protocol was applied in four indigenous goat breeds, Dukati, Capore, Kallmeti and Liqenasi, for the identification of rare variants of *κ-casein* gene, alleles E and M. Rare alleles can be used for the identification and typing of the breeds and their dairy products. Blood samples from 30 individuals of each goat breeds, Dukati, Capore, Kallmeti and Liqenasi, were collected and genomic DNA was extracted by standard protocols. DNA was amplified by specific PCR and digested by restriction enzymes. A protocol for genotyping of alleles E and M was performed using restriction enzymes, HaeIII and Pst1, respectively. Analysis by gel electrophoresis of the restriction patterns can determine directly the presence or not of the alleles E and M. Alleles E and M were not found in Dukati, Capore and Kallmeti breeds, however, in Liqenas breed the M allele was found at a frequency of 4.5%. This allele can be used as a genetic marker that characterizes this breed and its dairy products. Our study is the first step in the investigation and characterization of casein genes in Albanian goat and other husbandry breeds.

Keywords: genetic polymorphism, genotyping, goat breeds, *κ-Casein* gene

Extraction of oleuropein from olive leaves, in order to use as inhibitor against the corrosion of metals

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Oleuropein is the most abundant phenolic compound in olive leaves. This compound has been extensively studied for human health benefits. In recent years oleuropein, is proved to be an efficient inhibitor against the corrosion of metals and alloys. The use of chemical inhibitors has been limited, because of the environmental threat. The increasing ecological awareness among scientists have led to the development of "green" alternatives to mitigate corrosion. It is very important to choose cheap and safety handled compounds to be used as corrosion inhibitors. The extract of oleuropein from olive leaves, represent a great inhibitive action about 93%, against the corrosion of carbon steel in acidic media. oleuropein, a natural product of the secoiridoid group. Oleuropein is a heterosidic ester of elenolic deteracid and 3,4-dihydroxyphenylethanol, containing a molecule of glucose, the hydrolysis of which yields elenolic acid glucoside and hydroxytyrosol. Oleuropein from the olive leaves was obtained by alcoholic extraction in room temperature using microwave irradiation. The extract was stored at 4^{o}C and in the dark. The product of extraction was analyzed with HPLC, infrared (IR) and nuclear magnetic resonance (NMR) spectroscopy, in order to define it's chemical structure. Also we defined the yield, density and molecular weight of the product. The product of extraction was oleuropein and we propose to use it as corrosion inhibitor.

Keywords: extraction, olive leaf, oleuropein, corrosion inhibitor.

Allelic frequencies of MFW18 microsatellite locus in *Cyprinus carpio* from fish farming centers.

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For this study was used microsatellite locus MFW18. The material used for this study was taken from the fish farming centers of Tapiza in Tirana and Klos in Elbasan.
A total of 60 individuals of common carp from two fish farming centers were sampled and analyzed. The DNA fragments were amplified with PCR (Polymerase Chain Reactions) and analyzed in the Licor 4300 DNA analyzer. The value of observed heterozygosity (Ho) 0.530 was lower than expected heterozygosity (He) 0.882. A total of 33 alleles were detected. Microsatellite locus used was polymorphic.

Keywords: genetic diversity, alleles, heterozygosity

In silico analysis of myostatin gene in some farm animals

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In this study, we intend to investigate the genetic variation of myostatin gene in some farm animals. A total of 39 nucleotide and protein sequences were retrieved from GenBank. Sequence alignment was carried out with ClustalW. Maximum likelihood trees were constructed by MEGA V showing two clades of buffalo and cattle, sheep and goat as well. The ratio of non-synonymous substitutions per non-synonymous site (dN) and the number of synonymous substitutions per synonymous site (dS) imply a purifying selection, implying that synonymous sites have evolved faster than non synonymous. Functional analysis of missense mutations using PROVEAN showed that most of aminoacid substitutions were neutral, meanwhile one aminoacid substitution in sheep, two in goats and one in chicken appeared deleterious.

Key words: SNP, functional analysis; phylogenetic trees