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THE ROLE OF NATURAL RESERVATIONS OF MEDICINAL PLANTS IN BIODIVERSITY'S CONSERVATION

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ABSTRACT

The Natural Reservations of Medicinal Plants (NRMP) are a category of land that are protected with the goal of conservation and reproduction the rare species of medicinal plants. The Natural Reservations of Medicinal Plants of the Republic of Moldova occupy 2796 ha or 0,83% of the country's surface and are located, preponderant, in the forests. In the research were included: NRMP Rososeni, NRMP Loganesti, NRMP Sarata Galbena, NRMP Seliste, NRMP Cahul. During the research was appreciated the general ecological condition, established the sources and level of pollution of the environmental components from the studied ecosystems, the vegetation was described and species of flora and fauna were registered, highlighting the species of medicinal plants, rare plants and plants protected at national and international level. Based on the investigated indices, we determined that the studied objects are characterized by a good ecological condition, they have a rich diversity of medicinal plants and serve as favorable habitats for a lot of rare species of flora and fauna.The obtained results serve as scientific support for the argumentation of meeting the protection category of the mentioned objects, evaluation of the raw materials resources for pharmaceutical industry, filling in the ecological passports and the database regarding the Cadastre of Natural Areas Protected by the State.

Key words: Natural reservation, ecological condition, medicinal plants, rare species, biodiversity's conservation .

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THE STATUS OF THE HABITATS OF EUROPEAN CONSERVATION INTEREST ALONG THE ADRIATIC COAST OF ALBANIA

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ABSTRACT

This paper provides an assessment on the current status of the habitats of European Conservation Interest along the Adriatic coast of Albania, both in terms of habitat size and quality. Through remote sensing and GIS changes in size and habitat composition and dynamics of coastal wetlands along Adriatic coast are assessed and reasons of such changes are discussed. Special attention is paid to priority habitats of EU Habitats Directive (43/92 CEE) occurring along the Adriatic coast, shown with an asterisk (*).The following 13 types of habitats are assessed:1130 Estuaries;1150 *Coastal lagoons; 1210 Annual vegetation of drift lines; 1410 Mediterranean salt meadows (*Juncetalia maritimi*);1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*);1510 *Mediterranean salt steppes (*Limonietalia*); 2110 Embryonic shifting dunes;2120 Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’); 2190 Humid dune slacks dominated by *Erianthus ravennae* and *Schoenus nigricans*; 2250 * Coastal dunes with *Juniperus* spp.;2270 * Wooded dunes with *Pinus pinea* and/or *Pinus pinaster;*91F0 Riparian mixed forests of *Quercus robur, Ulmus laevis* and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*)*;*92A0 *Salix alba* and *Populus alba* galleries. Each habitat type has been assessed based on naturalness degree, distribution pattern, and threatening factors.

Key words: habitats, status, threats, Adriatic coast, Albania

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SAFETY OF THE FRESH VEGETABLES FROM IRRIGATION WITH WATER RIVER

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ABSTRACT

Today the good quality of life is the main target worldwide. A healthy way of life is closely related to the environment where we live, care and safety for food quality, where mostly are involved little or no processed products such as fruits and vegetables. It is important that food products are not contaminated by pathogenic microorganisms, which have a major impact on public health. Today, even in Albania, is really important the protection of human health, as related to lifestyle, environment, eating habits, etc. Erzeni River flows into the Adriatic Sea, having traversed the regions of Tirana and Durres. In this way, the physical-chemical and biological quality of the water river is present in the agricultural activity of these regions. Poor quality of the Water River used for irrigation is one of the reasons for the presence of microbial pathogens in fresh vegetables. The microorganisms present in these products come mainly from agricultural land and irrigation water. In this paper is analyzed the presence of the microbial pathogens (*fecal coliforms*) and the influence of physical-chemical factors along the Erzeni River during 2011. Also, is analyzed the influence of the water river used for irrigation in salads. Consequently, the salad irrigated by the water river result much polluted, specifically CF. The microbial contamination at levels 3-4 times above the permitted levels of urban pollution requires treatment and continuous monitoring of the water river as one of the immediate tasks with impact in the public health.

Keywords: fresh vegetables, irrigation, fecal coliforms, water river.

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FLY ASH BASED GEOPOLYMERS AS POTENTIAL ADSORBENT FOR COPPER REMOVAL FROM AQUATIC SOLUTIONS

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ABSTRACT

Fly ash is recognized as by-product material from coal fired power station. Production of large quantity of fly ash impose the finding the solution of fly ash utilization. Currently, especial attention is given to the possibility of fly ash utilization through geopolymerization process into the construction materials. Moreover, fly ash is currently being investigated as an adsorbent for the wastewater treatment. Heavy metals are often present in the wastewaters and currently available methods for its cleanup generate a quantity of toxic sludge. In this paper we have investigated possibility of fly ash based geopolymers as potential adsorbent for copper removal from water solutions. Two methods have been used for synthesis of fly ash based geopolymes: (1) fusion method with NaOH synthesis and (2) mixing of fly ash with alkali solution prepared by mixing of sodium silicate solution (sodium water glass) and NaOH solution. Change of Cu^{2+} adsorption efficiency in a function of time was investigated. The results have shown that higher efficiency of Cu^{2+} removal was achieved using the fly ash based geopolymer prepared by fusion methods.

Key words: geopolymers, water, adsorption, copper.

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ASSESSMENT STUDY OF FOREST ECOSYSTEMS FOR TOURISM DEVELOPMENT IN KUKES REGION

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ABSTRACT

This assessment study provides the basic information needed to formulate the strategic recommendations that will be presented in the tourism development plan. A team of consultants from different fields of expertise was appointed to complete this study, comprising specialists in the following areas: Tourism development; Environmental protection; Forest management; Culture and arts; Small and Medium-sized Enterprises (SME) development. The study concluded that the Kukes Region has sufficient strong assets to attract tourists, especially its outstanding natural resources of mountains peaks, alpine pastures, deep valleys and gorges, and spectacular lakes and rivers. However, tourism is not yet well developed. It is an emerging industry in the Valbona Valley where several guesthouses have opened and in Kukes City as the capital of the region which has a number of hotels, mostly catering to the business community. The environment of the Kukes Region is currently seriously threatened, damaged by pollution, neglect and vandalism which, if not checked, could become irreversible thus destroying the very assets that tourists are attracted to in the Kukes Region. The assessment study concludes with the analysis of the Kukes Region's Strengths, Weakness, Opportunities and Threats for the development of tourism and for the support and promotion of the environment, setting out the basis for the formulation of the tourism and environment promotion strategy.

Key words: ecotourism, forest and pasture environment, natural resources.

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HEAVY METAL BIOACCUMULATION IN THE RECREATION AREAS OF CHISINAU CITY REPUBLIC OF MOLDOVA

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ABSTRACT

This study comparing the ability of bioaccumulation of heavy metals (Pb, Cd, Ni, Cr) present in the atmosphere of the main recreational areas of Chisinau city. As organisms' bioaccumulation were used species of lichens *Physcia ascendens* and *Physcia grisea* and species of moss *Leskeela nervosa*, *Leskeela polycarpa* and *Pylaisia polyantha*. Method used to determine concentrations of heavy metals was that of atomic absorption spectrometry.
The results showed that a higher capacity to bioaccumulate a heavy metals has the lichens, their content is in close dependence on the source of pollution and pollution of biotope investigated. Such recreation areas in the center and some recreational areas in the south of Chisinau municipality recorded the highest concentrations of heavy metals in bioindicator thallus. Exceeding the limit values for Pb were observed in both thallus (lichens and moss), in all recreation areas of the city, indicating that the major source of this metal pollution is local.

Keywords: bioaccumulation, bioindicator, lichens, mosses, heavy metals.

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VIRUS DISEASES OF CUCURBITS IN KARAMAN PROVINCE

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ABSTRACT

Viral diseases are very destructive especially on squash (*Cucurbita pepo* L.) which is grown for seeds in Karaman province. In this study, it's aimed to determine the virus infections in major cucurbit growing areas of Karaman province. Totally 135 plant samples which showed the most common virus symptoms like mosaic, curling, blistering, mottling, distortion, shoestring, stunting and vine decline were collected from squash, zucchini, melon, watermelon, cucumber and pumpkin plants during 2009 and 2010 years. The viruses were identified by DAS-ELISA. The results showed that 83 % of plant samples were infected with *Zucchini yellow mosaic Potyvirus* (ZYMV), *Watermelon mosaic Potyvirus-2* (WMV-2), *Cucumber mosaic Cucumovirus* (CMV), *Papaya ringspot Potyvirus*-watermelon strain (PRSV-W) and *Squash mosaic Comovirus* (SqMV). ZYMV was the most prevalent virus in the infected cucurbit plants with the ratio of 53.4 % and occurred in squash, pumpkin, watermelon, melon and cucumber samples. WMV-2 was detected in squash (50 %), melon (43.1 %), cucumber (12.1 %) and watermelon (5.2 %). Also mixed infections were observed in squash, melon and cucumber more frequently than others. *Cucumber green mottle mosaic Tobamovirus* (CGMMV) was not present in the research area.

Key words: Cucurbits, DAS-ELISA, Karaman.

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REMOVAL OF CHROMATE FROM AQUEOUS STREAMS BY CROSFLOW FILTRATION

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ABSTRACT

Removal of chromate ions from aqueous streams investigated using Micellar-Enhanced Crossflow Filtration technique(MEUF) in which the cationic surfactant, cetyltrimethylammonium bromide(CTAB), was used as the carrier for the metal ions. The variation of chromate, and surfactant rejections with time were measured as a function of transmembrane pressure drop(ΔP), crossflow velocity and CTAB/chromate, while membrane pore size and pH of the feed solution was constant. The method was found to be effective in removing chromate from wastewater. It was observed that the efficiency of chromate removal for low CTAB concentration increased with increasing transmembrane pressure drop(ΔP), but decreased with increasing crossflow velocities. It was also observed that the effect of crossflow velocities on the rejections is decreased at the high CTAB concentration. Surfactant concentration had a significant effect on the formation of secondary membrane.

Keywords: crossflow ultrafiltration, surfactant enhanced filtration, chromate removal.

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BIOMONITORING OF ATHMOSPHERE AIR QUALITY

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ABSTRACT

The foundation of the sustainable ecological balance in the functioning of forest ecosystems serve Critical Loads established by the Geneva Convention (1979) for SO_2, NOx and NH_3. Through critical loads concerning the harmfulness of sulphur and nitrogen on ecosystems are understood the acidification deposition concentration levels, which cause no long-term adverse effects on the structure and functionality of ecosystems. Within our research, the air quality of 62 forest ecosystems from Republic of Moldova was assessed, taking into consideration the lichens indicator species specific diversity, abundance and toxitolerance. It was established that the Moldavian forest ecosystems do not contain reserves concerning critical loads for SO_2 pollution, the annual average for the vegetation season for dendrological species being 0,02 mg/m^3 air, and for communities of lichens and cyanobacteria, organisms sensitive to pollution, represented only 0,01 mg/m^3. Lichen indication demonstrated that the current level of pollution is between 0,05 and 0,5 mg/m^3 SO_2 air, thus long-term harmful effects are manifested in all 62 studied forest ecosystems.

Keywords: lichen indication, forest ecosystems, pollution with SO_2, toxitolerance.

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REINFORCED CONCRETE PANEL DESIGN FOR THE IMPROVEMENT OF THE SEISMIC BEHAVIOR OF THE FRAMES WITH INFILL WALL

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ABSTRACT

Strengthening methods applied frequently are the methods that require the temporary evacuation of the buildings.The method described in this study is a strengthening method applicable to the buildings having reinforced concrete frame system with hollow brick infill walls by not requiring any evacuation process. For this purpose, five panels with different geometric properties were designed and produced. In the scope of the study, the goal was to take the optimum decision about the subjects of design, production and easy applicability when the designed panel shapes had flat-surface or interlocking gear models. As a conclusion, it was observed that the flat-surface panels were produced and applied easier and more practical than the gear panels. Additionally, the aforementioned strengthening method was found to be easily applicable and economic in terms of manpower and time in comparison to the other traditional strengthening methods.

Keywords: Precast panel, strengthening, infill wall, RC Frame

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A COMPARASION OF DIFFERENT SPATIAL INTERPOLATION TECHNIQUES FOR GROUNDWATER LEVEL CHANGES

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ABSTRACT

Interpolation techniques are using in many different areas. The techniques give many advantages to scientists during the investigation. Different interpolation techniques were also used in environmental and geomatical researches especially determination of groundwater level changes. In this study, three spatial interpolation techniques (inverse distance weighted, local polynomial interpolation and universal kriging) were implemented and compared to determine the best spatial distribution of changes in the level of groundwater. 48 wells are used for study during the period 1999 to 2008 in the city of Konya, Turkey. Experimental variograms were fitted for three interpolation techniques and calculation of root mean square error (RMSE) values. Values for inverse distance weighted, local polynomial interpolation and universal kriging found as 2.92, 3.16 and 2.89 respectively. On this field, universal kriging gave the best results for changes in the groundwater level.

Keywords: Interpolation techniques, universal kriging, groundwater, Konya

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EFFECTIVE LEARNING ENVIRONMENTS IN HIGHER EDUCATION: CASE STUDIES OF ALBANIAN, AUSTRIAN, JAPANESE AND CROATIAN UNIVERSITIES

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ABSTRACT

The concept of an effective learning environment (ELE) includes various sets of psychological, didactical, methodological, organizational and other similar variables which provide for successful learning and student achievement. This research regarding student perception of the importance of ELE was conducted in 2010 and 2012 among nearly 500 university students in different countries across Asia, America and Europe. The first research in 2010 reported many similarities regarding the perception of the importance of some of the factors for successful learning such as communication with professors and colleagues, access to information and communication technology, student support services, library resources etc. During the past three years, universities have been faced with improvements and changes. Regarding this, students were asked to answer the same set of items as in the initial ELEsurvey. The purpose of re-testing these methods was to find which kind of improvement to an educational system has implications for the student's perception of its importance.The results will be presented in the form of statistical data analyses and interpretations of the resulting implications. Further research will be done on the sample of students from other countries included in the first part of the project.

Key words: Effective Learning Environment, Student Perception, Cultural Difference

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DISTRIBUTION OF *COLCHICUM DOERFLERI* HALÁCSY, *COLCHICUM TRIPHYLLUM* KUNZE AND *COLCHICUM BIVONAE* GUSS., IN ALBANIA

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ABSTRACT

Colchicum doerfleri and *Colchicum triphyllum* were recorded and described for the first time as new species for the flora of Albania. The new Colchicum spp. are geophytes, both spring-flowering with synanthous leaves; the first one has a narrow distribution range within Balkans whereas the second one is widely spread from Algeria to Ukraine. In Albania, C. *doerfleri* reported to occurs in the Ostrovica and Dry Mts, Korcha district, C. *triphyllum* in Çajupi Mountain, Gjirokastra district and a third species C. *bivonae*, reported recently, in lower lands of Konispoli and coastal areas near Himara. The species are observed during our field trip carried out in the spring of the years 2011 and 2012. The growing habitat for both first species is inhabited by other interesting species; so in Çajupi Mt, C. *triphyllum* is companied with *Gymnospermium maloi*, another endemic species that is described recently from Picari Mt. In the paper, distribution of species is illustrated and mapped, whereas the relationship with other Balkan species of the genus is discussed and compared.

Key words: *Colchicum doerfleri*, *Colchicum triphyllum*, geophytes, spring-flowering, Balkan, Albania

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A STUDY OF OZONE – DEPLETING SUBSTANCES IN ALBANIA, IN ORDER TO DETERMINE FORECASTS OF ODS CONSUMMATION.

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ABSTRACT

The article represents some data concerning the usage of the ozone depleting substances in Albania. These data are the result of a monitoring of the usage of the HCFCs from the year 2006 and on. The study is carried on based on the guide about "The Compilation of the Program for addition of the Ozone Secretariat" (UNEP/OzL.Pro/ExCom/54/53, 7 March 2008), the EU directives, the Albanian legislation, and the experience of the EU countries. The main use sectors of the HCFCs in Albania are cooling and refrigeration equipments. The reckoning method of the HCFCs consumption includes: a. Getting of the official importing quantities of the HCFCs and the respective equipments and b. The distribution data of the ozone depleting substances from the trade suppliers. According to the data of the year 2006-2009 the consumption of the HCFC (including both mixed and pure) is in constant increase as follows: 40tons in 2006; 46,34tons in 2007; 74,5tons in 2008 and 97,37tons in 2009. The whole consumption of the ozone depleting substances refers totally to the import data since Albania has never produced HCFCs substances. In our country no plastic foams, solvents and medical products based on HCFCs are ever produced. HCFCs used in Albania are R22, R402B, R402A, R406A and R502 which are the substituent of the CFCs. The consumption of the HCFCS in the used equipments working with HCFCs is cheaper. This study helped in preparing of a mini archive of the consuming equipments of the HCFCs and the compilation of an imported plan of the HCFCs in Albania. The study represents a valuable contribution on the environmental policy of our country.

Key words: monitoring, HCFCs, importing plan, mini archive for HCFCs.

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REHABILITATION OF THE KUNE WETLAND ECOSYSTEM

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ABSTRACT

The Kune lagoon is part of the Kune-Vain wetland ecosystem located in the Albanian Adriatic coast. The ecosystem includes wetlands, marine waters, lowlands, shrubs, water courses, agricultural land and pastures. It is also the first national protected area nominated in Albania (in 1940). The Kune lagoon has undergone significant transformation during the last decade. This transformation has involved different components of the ecosystem, such as the coastline, bioindicators of the trophic state, the water quality, etc. The once existing communication channels that ensured a healthy environment for fish and other fauna, are actually closed. This study evaluates the main components of the ecosystem and assesses the factors that potentially influence the general situation of the ecosystem and the interaction of these factors with each other, correlating them with the ecosystem components. Factors that are assessed in this study include the causes of the drastic erosion of the coastline, changes in communication canals between the lagoon and the sea, urban, business and agricultural development in the area, water resources, sedimentation, etc. Based on a holistic analysis of these factors and their correlation, respective measures of rehabilitation are recommended and a management strategy is proposed.

Keywords*:* Kune lagoon, wetland management, management strategy

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SERUM LEVEL DETERMINATION OF TRACE ELEMENTS, SUCH AS IRON AND ZINC, IN PREGNANT WOMEN AND UMBILICAL CORD OF NEONATES

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ABSTRACT

Minerals and trace elements, such as zinc, copper, iron and other micronutrients, have significant influence on the health of pregnant women and the growing fetus. During pregnancy, iron needs are usually very high to meet the requirements for the fetus, placenta and maternal red cell expansion. Such demands cannot be met by diet alone, so that iron supplements are commonly recommended during pregnancy. A total of 50 pregnant women, aged 16-38 years, were investigated for analysis of serum levels of trace elements. Hemoglobin (Hb) concentrations were determined using a hematology cell counter, whereas maternal and cord blood serum levels of zinc and iron, were determined by colorimetry. During third trimester, the mean serum levels of zinc and iron were significantly lower in anemic pregnant women (group I: Hb<11.0 g/dL, n=33) than the levels in non-anemic pregnant women (group II: Hb≥11.0 g/dL, n =17). No significant difference was observed between serum iron levels among the three trimesters; however, cord blood iron levels were higher than the levels in the maternal blood. Of the 33 anemic pregnant women observed, only 10 (30.3%) had Hb levels between 9.0 and 10.0 g/dL, 7 (21.2%) had Hb value less than 9.0 g/dL, and 2 (6%) had Hb values below 7.0 g/dL. The mild anemia observed in some of the pregnant women included in this study, had no significant effect on maternal or cord blood parameters or neonatal birth weight.

Keywords: trace elements, iron, pregnancy, umbilical cord, iron serum levels

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THE PRECIPITATION REGIME IN SHKODRA ECOSYSTEM: A CASE STUDY

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ABSTRACT

Precipitation is an important element of climate. Its impact in the ecosystem is direct. Its assessment constitutes a necessity. For the evaluation of the precipitation regime and its tendencies in the region of Shkodra, there has been analyzed data for a period of over 35 years. These values are the contribution of meteorological control centers in Shkodra. For analysis of meteorological indicators were used mathematical methods of statistical analysis, regression equations, and mean deviation. The data processed with the Excel program and its graphical presentation, gives us the possibility of having a clear interpretation on local climate and its changes. The regression equation was: $y = -0.894x + 181.5$ with $r = 0.368$. This means that for every 5 years there is a variation of precipitation with about 4.5 mm per month. Analysis of the factual and theoretical results indicates significant differences. By analyzing the varying average we conclude on large margins. From analysis of data presented in the precipitation chart it results that the precipitation values are of cyclical character. These cycles of precipitation, with approximate values, are of the time periods between 1951-1961, 1962-1972, 1973-1983, 1984-1994 and 1995 onwards.

Key words: precipitation, climate indicator, area, regression

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RADIOACTIVITY DETECTION IN AIR AND RAINWATER SAMPLES IN THE CITY OF VLORA, ALBANIA

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ABSTRACT

Measurements of low level radioactivity of atmospheric particulate material and rainwater samples were performed from April 2011 to January 2012 in the city of Vlora, by collecting and analyzing them every two weeks. Samples were analyzed for gross alpha and beta activities. Atmospheric particulate material is sampled near ground level by air samplers, while the samples of rainwater are collected by polythene bottles placed at the station located on the roof of university main building about 20 m above the ground level. Measurements of gross alpha and beta radioactivity samples were performed on a MPC 9604 (Nuclear Physics Center at Tirana) and Canberra 2400 (Nuclear laboratory at University of Yoanina) Gross Alpha/Beta detector (gas proportional detector) with efficiency of 20% in measuring alpha particles and 40% in measuring beta particles. Radioactivity measurements of gamma radioisotopes were performed on a high resolution γ-spectrometry system with a Canberra BE3825 HPGE detector of 70% relative efficiency at the Yoanina Laboratory.

Key words: air and rainwater samples, radioactivity, gross alpha and gross beta activity.

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CULTURAL AND HERITAGE TOURISM IN THE REGION OF GJIROKASTRA, ALBANIA

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ABSTRACT

The southern Albania has many beaches for the development of mass tourism. This article describes the beach resorts and provides information that will help you to plan a vacation and enjoy the beauty of southern Albania's coast. Changes in the southern region of Albania during the last century have been significant and noticeable. Tourism is now a mass phenomenon in southern Albania. *The main objectives of the study are:* To contribute to recognition as full performance of all time and space tourism; To identify the main factors that accelerates tourism;To synthesize the results of studies conducted by specialists from different disciplines and to define the main directions of activity for tourist development. The present scientific breakthroughs on the practical problems of tourism development and regulation of forms of rural areas. *The importance of the study lies in:* better knowledge of the condition and performance of the tourist movement in the southern region; identification of problems created by previous practices of tourism development; setting priorities and most appropriate ways to develop sustainable tourism. Proposed models for the rational use of space and natural and human resources, tourism development and guaranteeing the preservation of the environment and rural landscape values of the southern region. At the entrance of the paper is a general picture of space taken in the study, methods and methodology of field work in the office, sources of information and level of reliability data. Using the method has enabled the achievement of outcomes research, issuing findings and concrete suggestions and explained about the development of sustainable tourism in the southern region. Based on the tourist viewpoint paper analyzed the effects of natural and cultural factors in tourism development and cartographic presentation of tourist areas. Important is the impact of tourism on natural landscaping and appearance of the community the opportunity to put to use natural and cultural potentials of the region. South Country rural space is valuable tourist asset, both for the domestic market, regional and national and international alike. This property also presents particular interest because of the positioning of the region into a region with traditional tourist corridors and near major tourist movement. Southern Region provides resources for tourism development are numerous types of tourism. Southern Region provides resources for tourism development are numerous types of tourism. In a small territory varied ecosystems found, extremely rare and multiple values, which play an important role in the development of tourism. Albania's southern region offers significant potential for tourism with the possibility of involvement in the international tourist market. It is based on the strong points to build the future of tourism, mainly on: the shore of the sea, nature, culture, time and place convenient. For natural values that bear ecotourism in the southern region is unique and original.

Keywords: ecotourism, rural tourism and ecotourism, sustainable development.

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TIME AND TEMPERATURE DEPENDENCE OF CREEP MODULUS OF ELASTOMERS: A MATHEMATICAL ANALYSIS OF THE CREEP, USING BURGER MODEL

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ABSTRACT

Many polymeric materials are susceptible to time-dependent deformation when the stress level is maintained constant; such deformation is termed viscoelastic creep. The time-dependent creep modulus it was analyzed and compared for natural and vulcanized rubber, at same temperature. In a one-dimensional creep test, the samples are subjected to a sudden stress that is maintained at a constant level duration the test, and the strain is measured as a function of time. Creep results are represented as a time-dependent creep modulus $E_c(t)=\sigma_0/\varepsilon(t)$. The experimental results indicate that creep modulus of natural rubber is greater than vulcanized rubber due to the crosslink's of vulcanized rubber.Also, it was analyzed the temperature dependence of creep modulus for both samples. The creep modulus is temperature sensitive and diminishes with increasing temperature. To permit a mathematical analysis of the creep for natural rubber at $T_1= 26^0C$ and $\sigma= 0.069$ MPa, it is used Burger model (the combined of Maxwell element and Kelvin-Voigt element) that exhibits all the essential features of viscoelasticity.

Keywords: elastomers, viscoelasticity, creep module, rubber.

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WATER QUALITY MANAGEMENT BY MATHEMATICAL MODELS

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ABSTRACT

In order to determine the impacts of a particular discharge on ambient water quality, it is usually necessary to model the diffusion and dispersion of the discharge in the relevant water body. Integral water quality management involves use of the Geographic Information Systems (GIS), and lately more often tools are complex water quality models, which are used extensively in research as well as in the design and assessment of water quality management measures. The application of mathematical models for that purpose dates back to the initial studies of oxygen depletion due to organic waste pollution. Since then, models have been constantly refined and updated to meet new and emerging problems of surface water pollution, such as eutrophication, acute and chronic toxicity, etc. In order to handle the complex interactions caused by the increased influence of human activities in rivers it is today mandatory to couple river water quality models with models describing emissions from the drainage and sewerage system. The paper tends to present prospects of using integral approach and complex water quality models in order to contribute to better assessment and prediction of processes in canal network in the region of Tirana. Some successful applications of ArcMAP model are presented as well.

Keywords: water quality, transport equation, models, analyses, projects

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INDICATION OF URBANIZATION ON UNEMPLOYMENT REDUCTION IN COMMUNE OF KASHAR IN TIRANA DURING 2010-2011

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ABSTRACT

This study was carried out in two years (2010-2011) having as objective evaluation of unemployment in commune of Kashar in Tirana. This commune is affected by fast urbanization, economical growth, demographic and environmental changes as well other social problems. Because of location and activity of different business unemployment is reduced. According to the study results in two years (2010-2011) unemployment is reduced 3.2%. The number of businesses having activity in this territory has a tendency to be growth with 2.5% each year. About 58% of new employers interviewed were belonged to age between 19-40 years old. 32% of employed persons interviewed belonged to age 41 to 45 years old. About 7% had an age between 46-50 years old and 3% had an age over 50 years old. Even thought reduction of the unemployment, the employment of people over 45 years old remains a social problem because they ensure the most incomes for their families.

Kew words: urbanization, reduction, unemployment, Kashar, Albania.

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STUDY AND CONSERVATION OF GENETIC MATERIAL FOR SOME MEDICAL PLANTS

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ABSTRACT

Our country has a wide variation of ethero-oil and medicinal plants due to its favourable climatic-pedologic conditions. The biggest Surface of these plants lies in Castanetum Zones around 37% and Fagetum Zones around 27%. In a lot of rural zones, in order to gain maximal profits, the collection of ethero-oil and medicinal plants has been done out of norms and technical criterion, which has made possible that most of this natural property to go toward reduction and extinction. Study of some of the vegetation features and ecological conditions of ethero-oil and medicinal plants provides the possibility of conserving a considerable genetic material of them. A special attention has been paid to finding the best ways of reproduction and cultivation of Origanium vulgaris, Salvia officinalis, Lavandula officinalis . From their regeneration has been obtained a considerable amount of seeds that will be used at the right moment for their propagation, as the only way for the conservation of the genetic source in a natural controlled environment.

Key words: conservation, genetic material, medicinal plant.

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THE CONTENT OF ESSENTIAL OIL OF *THYMUS TOSEVII* VEL. SUBSP. *TOSEVII* VAR. *DEGENII* (LAMIACEAE) PLANTS ORIGINATING FROM PELISTER, BITOLA, MACEDONIA

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ABSTRACT

Lamiaceae (syn. Labiatae) herb family consists of more than 252 genera and 7000 species. Among the aromatic plants belonging to the family Lamiaceae, the genus *Thymus* is noteworthy for the numerous species and varieties of wild-growing plants. Many of these species are typical for the Mediterranean area. The genus *Thymus* has numerous species and varieties, and their essential oil composition has been studied earlier. The objective of this study was to determine the content and hydrodistillation kinetic of *Thymus tosevii* Vel. subsp. *tosevii* var. *degenii* essential oil which is endemic species of Pelister, Baba Mountain (Bitola, Macedonia) using the Unger-type apparatus. It was also investigated how the raw plant material affect duration of hydro-distillation and the final yield of the essential oil in order to improve the essential oil production process. Essential oil production and its composition in plants is mainly affected by the combined influences of both genetic factors and cultivation conditions such as climate, plant density and extraction technique.

Key words: thyme, *Thymus tosevii* Vel. subsp. *tosevii* var. *degenii*, essential oil, hydrodistillation

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PROMOTING ECO-INNOVATIONS TO LEVERAGE SUSTAINABLE DEVELOPMENT OF ECO-INDUSTRY AND GREEN GROWTH

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ABSTRACT

In the modern world, ecology and the economy are on cross roads. With the increasing pace of globalization and economic liberalization, giving birth to the rapid growth of consumerism by the modern civilization, there is growing consciousness to move gradually towards green growth with sustainability. This is now becoming possible by enhancing eco-consciousness both among the producers as well as the consumers. The chosen path is obviously to go in for more and more eco-innovations to provide complementarily to industrial production without sacrificing much on the production as well as economic front. Renewable alternate technologies – widely known as eco-technologies, are now being developed with massive investment on R&D activities by several research organizations across the world to achieve this mission. To leverage the gains from eco-innovations and achieved through proactive and carefully planned organizational and R&D support, there seems to be a surge in the growth of Eco-industries; which in turn, are getting increasingly organized as a chain of eco-industry, by constantly evolving replicable as well as sustainable eco-industrial models in the emerging sectors of economy, prominently in the EU countries. The paper takes a holistic and strategic review on how the Eco-innovations and their eco-specific promotional and developmental efforts are stimulating the sustainable development of Eco-industries and enhancing Green growth by setting up of demonstrable Eco-industrial models in multi-sectoral areas in Europe and the other parts of the world. The paper also provides a brief account of various corporate and entrepreneur initiatives taken in developing sustainable Eco-industrial business models and the methodologies to measure the impact of eco-innovation projects.

Key Words: Eco-innovation, Eco-industry Models, Green Growth, Green Marketing, Eco-efficiency, Eco-innovation Impact measurements

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RELATIONSHIP BETWEEN LIPOPHILIC TOXINS LEVELS AND ABUNDANCE OF POSSIBLE CAUSATIVE PHYTOPLANKTON SPECIES IN BUTRINTI LAGOON

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ABSTRACT

The aim of the current study was to analyze the relationship between lipophilic toxins levels and abundance of possible causative phytoplankton species in Butrinti Lagoon during 2007-2009. The consumption of shellfish that have filtered cells of the dinoflagellate genus *Dinophysis* have led to cases of intestinal upset. Two varieties appear responsible for DSP: *Dinophysis acuta* and *D. acuminata*. Diarrhea was the most commonly reported symptom (92%), closely followed by nausea (80%) and vomiting (79%), with onset 30 minutes to 12 hours from ingestion. Complete clinical recovery is seen even in severe cases within 3 days. The toxins are fat soluble, have high molecular weights, and belong to a class of compounds called polycyclic ethers. Samples were collected in Butrinti Lagoon, known for the aquaculture activity (cultivation of the blue mussel, *Mytilus galloprovicialis*) and fishing. About 346 samples of *M. galloprovincialis* were analyzed with mouse bioassay. Only 31 samples from 346 shown positive results for the presence of lipophilic toxins that cause DSP with higher concentration of limit sets in EC Regulation No. 853/2004. The presence of different dinoflagellates, that are known to produce lipophilic toxins, was observed in the samples during that period, like *Gonyaulax spinifera, Dinophysis sacculus, Dinophysis acuminata*.

Keywords: Butrinti Lagoon, DSP, *Mytilus galloprovincialis*, dinoflagellates

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THE MEASURES TO CONTROL THE AMMONIA EMISSION FROM AGRICULTURAL SOURCES IN ALBANIA

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ABSTRACT

The control and the reduction of sulfur, nitrogen oxides (NOx), ammonia and other volatile organic compound (VOCs) emissions from the human activity were the main objective of Gothenburg Protocol. These compounds have adverse effects on natural ecosystems and human health due to the acidification, eutrophication and the increase of ozone concentration in troposphere. This study analyzed the measures needed to be taken in order to control the ammonia emissions from agricultural practices. Albania as a participant of this Protocol is required to compile, publish and disseminate a manual or guide to good agricultural practices to control ammonia emissions. The specific conditions within the country will be taken into account when compiling this code; the code will also include provisions on: nitrogen management while taking into account the whole nitrogen cycle; livestock feeding strategies; low-emission manure spreading techniques; low-emission manure storage systems; low-emission animal housing systems; and possibilities for limiting ammonia emissions from the use of mineral fertilizers.The implementation of good agricultural practices regulates the activities in some of the areas referred to the Protocol, including land use, the use of fertilizer, livestock breeding and animals welfare, manure management, plant protection, water management and water pollution, agricultural systems and biological diversity.

Keywords: Ammonia, emission, agricultural practices, nitrogen.