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MACROZOOBENTHOS DIVERSITY OF TWO BULGARIAN RESERVOIRS ACCORDING TO SOME ENVIRONMENTAL PARAMETERS

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ABSTRACT

The reservoirs Ovcharitsa and Byal Kladenets are part of the hydrotechnical complex used to supply and recirculate waters for additional cooling for the coal/steam electric power station Maritsa Iztok II in South-Eastern Bulgaria. The water used as a coolant is withdrawn from the dam part of the Ovcharitsa reservoir and returned to the Byal Kladenets from where it flows back again into the middle sections of the Ovcharitsa reservoir. The average water temperature from Byal Kladenets reservoir is higher than the temperature in the Ovcharitsa reservoir during the whole year. The objective of this study was to represent the difference in the macrozoobenthos communities in these two hydrological connected reservoirs, according to some environmental parameters. The survey was based on samples taken in four occasions between April and August of 2013. Qualitative samples of benthic macroinvertebrates were taken according to the standard methods ISO 9391:1995 and EN 27828:1994. The species composition, monthly distribution pattern and abundance of the macrozoobenthos were studied. A total of 37 bottom invertebrates taxa in the Ovcharitsa reservoir and 31 taxa in the Byal Kladenets reservoir were established, 37 of them identified to a species level. The most abundant was class Oligochaeta, followed by Diptera: Chironomidae and Bivalvia. In nearly the same taxonomic composition, the results showed that the density and biomass in the cooler Ovcharitsa reservoir were several times higher than in the hotter Byal Kladenets reservoir. The highest values were measuread in April in the Ovcharitsa reservoir, whereas during the same period the abundance and biomass in the Byal Kladenets reservoir were the lowest. This confirms the role of the termal factor for the much more intensive metabolism in the Byal Kladenets reservoir.

Key words: macrozoobenthos, diversity, bulgarian reservoirs, environmental parameters

Vol. 5 (3): 299- 308 (2015)

COPPER REMOVAL FROM WASTEWATER USING NATURAL PUMICE

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ABSTRACT

This study was conducted on the pumice supplied from the Van Province, Turkey. The physicochemical properties of $CuCl_2$ at pH 5 were studied and the analyses were performed at a temperature of 308 °K at various concentrations (75 ppm, 100 ppm, 125 ppm) of Cu(II). In this study, we aimed to investigate the adsorption behavior between the Van pumice and Cu(II).

Key words: Heavy Metals, Adsorption, Isotherm, Van Pumice, Thermodynamics

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RESEARCH OF THE CONTENT OF THE WATER DRAINAGE LANDFILL PEJA

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ABSTRACT

Waste collection represents one of the more serious problems of civilization as municipal terms as well as from commercial, sanitary-epidemiological, construction, hydrological and technological. Heaps of waste in open air produce pollution and other hazardous substances, as such landfill waters which have a high degree of contamination have been and are potentially polluting surface and underground waters. Taking into account all these elements quite harmful to the environment, in this paper master, research treated drainage water content and the problem of waste disposal at the regional landfill Peja according to EU standards. The main goal is to ensure minimal environmental impact.

Key words: research, content, water drainage, landfill, Peja, Kosovo

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THE EXAMINATION OF PARACETAMOL AND DICLOFENAC REMOVAL IN ACTIVATED SLUDGE SYSTEMS UNDER DIFFERENT OPERATING CONDITIONS

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ABSTRACT

Pharmaceuticals compounds are widely used to maintain human and animal health worldwide. After human consumption pharmaceutical compounds in the urban aquatic environment reach to the wastewater facilities and eventually find their way to the surface waters. Aim of this study was to determine the effects of various sludge retention times (SRT) and hydraulic retention times (HRT) using lab-scale continuous stirred tank reactor (CSTR) for the removal of diclofenac and paracetamol in activated sludge. In order to find out removal rates of these pharmaceutical compounds, activated sludge reactor were operated at different sludge retention times (SRT: 10, 20, 30 days) and different hydraulic retention times (HRT: 12 and 24 hours). The highest removal rates were obtained under 30 days of SRT and 24 hours of HRT operating conditions. Maximum removal of 95% was observed for paracetamol and 44% for diclofenac. The operational implementation of SRT and HRT has been shown to increase the removal efficiency of pharmaceutical compounds.

Key words: pharmaceutical compounds, solid retention time, hydraulic retention time, biological removal

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EXTRACTION OF ESSENTIAL OIL FROM ALBANIAN CHAMOMILE EXTRACTION OF ESSENTIAL OIL FROM ALBANIAN CHAMOMILE PLANT BY WATER DISTILLATION METHOD AND ITS CHARACTERIZATION BY FTIR SPECTROSCOPY

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ABSTRACT

Albania is rich in biological and ecological diversity and it is mentioned for its natural bio-resources such as medicinal and cosmetic plants. Albania is as well a considerable producer of wild herbs and spices, including sage, raspberry, oregano, and chamomile. It is well known that the extraction of bio-organic compounds from herbs can be performed by water distillation method. The latter is a special type of distillation for temperature sensitive substances such as natural aromatic compounds. Additionally, it is an environmentally friendly method. Oil extracts of chamomile plant obtained by water distillation were characterized by FTIR spectroscopy. Analyses by IR spectroscopy technique indicated presence of matricine (chamazulene) and dicycloether.

Key words: Chamomile, essential oil, water-distillation, FT-IR spectroscopy.

Vol. 5 (3): 325- 332 (2015)

ECONOMIC THEORY OF LAND, LAND USE AND LAND MARKET, PROBLEMS AND POLICIES OF THEIR DEVELOPMENT IN ALBANIA

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ABSTRACT

Land has been incorporated in economic theories in various ways and its role is surveyed, both from a conceptual and historical perspective. Originally, land used by agriculture was the main motivation for an economic treatment of land. This was gradually extended with various other land use categories. Attention for environmental and resource problems has stimulated new perspectives on land and conceptualizations of it in economic analysis. The paper will focus only on the area of agricultural land that in Albania occupies about 24% of the total land area. Planning policies for land use have their specificity and conditioned by the type of ownership over it. The problems that land reform is currently facing, are related with resolution of identified conflicts about land ownership, which extending geography is concentrated more on the suburb of large urban centers, in the coastal zone, also. The land distribution process created a large number of farms, but with limited area. Soil fertility, distance from the village, distance from the road, irrigation facilities, were some of the criteria taken into consideration during the process of land distribution. In 1991 the agricultural land has resulted in 100% state owned. Land privatization brought a lot of changes in its mode of administration and represents the most radical reform in the transformation of the right of ownership, the state-owned land to private land, marks a major achievement for the Albanian economy. In the conditions of our country, the development of the land market, especially the sale and purchase of agricultural land as a component of the whole market economy, gets a special significance. But, in addition to positivity in the development and dynamics of this market in our country, there are some obstacles and difficulties of socio-economic and institutional character. As above, focusing on agricultural land, the purpose of the study is to treat its sustainable management as a main component of sustainable agricultural development; consolidation of the rights on ownership of agricultural land through the verification of the mode of giving the property titles given throughout the period of land privatization; improving land management policies in line with the types of ownership, mode and more effective models for land consolidation and expansion of farm size for protection of agricultural land damage caused by natural and human factors; the current policies of the state on the land market, the effectiveness of their implementation, as well as recommendations for possible and perspective improvements on economic policy related to the land market in Albania.

Key words: economic theory, agricultural land, privatization of land, sale and purchase of land, sustainable management, law, economic policy of land market.

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SPATIAL DISTRIBUTION OF SELECTED ELEMETNS IN STREAM SEDIMENTS OF KOSOVA BASIN

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ABSTRACT

Geochemical sampling methods are methods which involve collecting and analyzing various types of geological materials (such as soils, stream sediments and rocks) or certain biological materials (such as plants). Stream sediment geochemistry can be used to quantify natural geochemical baselines and anthropogenic effects. For stream sediment, pan concentrate, and in some cases soil samples, the procedure is often to plot all the values on a map, determine an arbitrary or statistical threshold and highlight the anomalous values. Kosovo Basin is the largest basin in Kosovo covering an area of 1400 km^2. The soils in this basin are used mainly for agriculture. Surficial geochemical data are important for solving problems in mineral resources, geology, agriculture, forestry, waste disposal, and environmental health. This study examined the spatial distribution of the following metals in stream sediments: arsenic (As), chromium (Cr), copper (Cu), mercury (Hg), manganese (Mn), nickel (Ni), lead (Pb) and zinc (Zn) are included because of their influence on availability of heavy metals to stream water or their potential use in interpreting the distribution of heavy metals. Most metal concentrations can be spatially related to the regional geology, structural trends, or the local effects of individual rock units. For each selected elements was created a set of maps (combination of post map, contour map, 3D wire frame map and 3D surface map). Results obtained using these techniques show some anomalies for selected elements in various parts of study area.

Key words: stream sediment, selected elements, statistical analysis, spatial distribution

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GEOGENIC IMPACT IN THE CONCENTRATION OF SOME SPECIFIC HEAVY METALS IN SOILS IN THE BASIN OF FUSHË KOSOVA

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ABSTRACT

Recent soil sampling and testing in Kosovo have shown higher concentrations of some heavy metals. The purpose of this paper is to research the possibility of geogenic impact on concentration of some specific heavy metals. Study includes geochemical analysis of stream sediments of Kosovo Basin, as representative of geogenic background, and analysis of certain areas of soil in the alluvial plain of Kosovo Basin. In order of investigating the content and correlation, selected metals such as arsenic (As), chromium (Cr), copper (Cu), mercury (Hg), manganese (Mn), nickel (Ni), lead (Pb) and zinc (Zn) have been studied in stream sediment and soil, using statistical analysis including univariate statistical methods (descriptive statistics) and multivariate statistical analysis (correlation matrices). Beside the statistical analysis, assessment includes geological and anthropogenic aspects of certain areas. It is estimated that elevated concentrations of Ni and Cr of soil are most likely of geogenic origin. An approximate value of the mean and median of As in the soil are in ranges of normal concentration and indicates also geogenic origin. This also applies for Hg and Mn. Interesting anomaly appears to Cu, where the averages as well as median in soil and sediment up to 2 m depth resulted with higher values than the average and median in the stream sediment. The values of Pb and Zn in soil are in range of normal concentration, while in areas of anthropogenic impact (Mitrovica with the surroundings) they reach very high values.

Key words: geogenic, origin, heavy metals, soil, Kosovo basin.

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STUDY OF TROPHIC STATE INDICATORS OF TIRANA ARTIFICIAL LAKE, ALBANIA

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ABSTRACT

The trophic state of a freshwater ecosystem reflects its environmental quality. This is why several trophic indicators have been developed for such water bodies based on chemical, physical and biological parameters. In accordance to the above, the present study is an attempt to assess the trophic condition of the artificial lake in Tirana through the investigation of the physicochemical parameters along with the biotic indicators. The magnitude and management implications of spatial variability in trophic state metrics was simulated by measuring mean values of dissolved phosphorus, ammonium, nitrate and nitrite nitrogen and chlorophyll a,b,c, during the period winter-spring of 2013 and detecting trends in these variables in Tirana Lake water. Results emphasize the need for long-term data to fulfill lake management needs and suggest that ordinary lake monitoring typically will not detect trends in individual lakes.

Keywords: trophic state, chlorophyll, a,b,c, artificial lake

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BIOMONITORING OF ATMOSPHERIC DEPOSITION OF HEAVY METALS USING MOSS FROM THREE REGIONS IN ALBANIA

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ABSTRACT

The insidious accumulation of heavy metals over large areas and long periods, resulting in slow damage to living organisms, necessitates careful monitoring of the input, movements and effects of such pollutants. Mosses have demonstrated the ability to absorb and accumulate atmospheric pollutants in tissue, so the moss biomonitoring technique was applied to air pollution studies in our country. Samples of terrestrial mosses *Hypnum cupressiforme* were collected at 13 sites during October-September 2010 following the the guidelines of the UNECE ICP Vegetation. The elements like aluminum, lead, zinc, copper and cadmium were analysed by ICP-AES technique. Geographical distribution maps of the elements over the sampled territory were constructed using GIS technology. The most contaminated sites with heavy metals resulted to be those with high road traffic, high population density and in the vicinity of different residential and industrial activities.

Keywords: air pollution, biomonitor, moss, heavy metals, ICP-AES.

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VARIABILITY OF ESSENTIAL OIL AND THUJONE CONTENTS IN SAGE ECOTYPES

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ABSTRACT

Sage (*Salvia officinalis* L.) is originated from Europe with high concentration in the Mediterranean area. Many ecotypes are recognized in western and north western parts of Albania. From the standpoint of active principles content the ecotypes of north western Albania have the highest value. This study reflects the variability of active principles content (thujone and essential oil) in ecotypes of north western Albania in its natural habitats as well as under cultivation. There are significant differences of thujone and essential oil between country ecotypes and foreign cultivars.

Key words: Sage, essential oil, thujone, variability, sage cultivation

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HEAVY METAL CONTAMINATION AND TOXICITY: A CASE STUDY IN SOUTH ALBANIA

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ABSTRACT

An exposure to heavy metals is a significant problem of environmental toxicology. Owing to their toxicity and their possible bioaccumulation, these compounds should be subject to mandatory monitoring. The purpose of this study was to determine the degree of contamination wich plants are burdened with some heavy metals: Al, As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, V, and Zn. This paper analyzes the heavy metal contents within a 3-years period in the mosses. The use of native terrestrial mosses as biomonitors is now a well-recognized technique in studies of atmospheric contamination. Samples of the terrestrial moss *Hypnum cupressiforme* were collected in September – October 2010 from 16 sites according to the guidelines of the LRTAP Convention–ICP Vegetation. Collected moss samples were cleaned and totally digested by using microwave digestion system. The content of elements was determined by atomic emission spectrometry with inductively coupled plasma (ICP–AES). The variations of heavy metals concentrations with sampling sites are shown in heavy metal contamination diagrams. Contamination factor indicates severe contamination of As, Cd, Mn and Ni at some sampling sites. However, extreme contamination was not recorded at any sites for any metals.

Keywords: atmospheric pollution, heavy metal, biomonitoring, moss, ICP – AES

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ECOLOGICAL AGRICULTURE - CASE STUDY AGRI REGION TURKEY

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ABSTRACT

The present paper renders some aspects related to organic agriculture in Turkey generally and specific aspects about some villages of Agri region particularly. The paper also includes the interpretation of the statistical data (for 2013) regarding the main agricultural surfaces from nine villages situated at 1,640 meter altitude in Agri region (Arakonak, Ahmetbey, Aslangazi, Badılı, Aşağıküpkıran, Ağıbaşı, Anakaya, Baloluk, Akbulgur). In these villages, the citizens' number is low, ranging between 77 and 1,339 inhabitants; we mention that the agricultural surfaces are also reduced (between 22,067 and 5089,601 ha). For each village, there is a detailed description of the agricultural surfaces according to the main crops (cereals, beet, onion), as well as of adjacent plots cultivated with vegetables or the total number of domestic animals. All the data used in the present paper are interesting, new and original. The paper makes reference to the results regarding the soil analysis for heavy metals made in 2013 in the Central Laboratory of Ibrahim Çeçen University.

Key words: organic agriculture, Agri region (Turkey), arable surfaces

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MANAGING SUSTAINABLE COASTAL TOURISM FOR THE FRAGILE NORTH AREA OF DURRES

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ABSTRACT

The north part of the city of Durres, is a very virgin and natural coastal area because of the lack of infrastructure. It linear spread offers the entire natural (climate, landscape, ecosystems) and cultural (historic and archeological) resources to propose a very profitable coastal tourism and suits to specific types of tourism activities. Because of the city developments and the need for tourism profits, this area is under the great pressure of different stakeholders. Urban plans and developments organized by the municipality and completed by foreign studios estimate to develop the area with hotels, resorts and tourism activities. Meanwhile the zone is under protections and declared by the Territorial Regulatory Council as a Protected Park. Although the number of tourist visiting the country has increased every year since 1991 and the importance of the tourism sector's contributions to the economy cannot be dismissed, this sector generates a host of undesirable effects and impacts on the environment and the landscape. In the south part of Durres, tourism has aggravated existing environmental problems and drastically changed the natural landscape. In order to promote the development of an appropriate kind of tourism that prevents or minimizes environmental degradations and loos of natural landscapes, more in-depth studies are needed for an understanding of the industry's problems. The present study is an attempt to highlight the impacts of tourism on the environment and to represents some possible types of tourism which the different stakeholder may consider while projecting the future of the area.

Keywords: Ecotourism, Coastal Tourism, Impacts, Natural Resources, Landscape, Environment.

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GENERATION OF TSUNAMI IN THE ADRIATIC AND IONIAN SEA AND THEIR POSSIBLE EFFECT ON MARINE ECOSYSTEMS

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ABSTRACT

This study represents a simple model for the changes calculation that coastal structure of the Adriatic and Jonian Sea may undergoes by a tsunami impact in the maritime dimension. In spite of the fact that the great majority of seismic tsunami is generated in ocean domains, smaller basins as the Adriatik and Ionian Sea sometimes experience this phenomenon. In this investigation we study the tsunami hazard associated with Adriatic and Ionian Sea fault system. The study has been carried out based on the coastal structure of Adriatic Sea, in the subsequent studies, that how this structure will affect on the tsunami wave. Tsunamis are one of the most destructive natural hazards that affect the coastal areas. Its waves are capable of destroying the objects on the coast and re-shaping the coastal geography, geomorphology and ecosystem. These waves have unusually long-wavelength in excess of 100 kms, generated in the open sea and transformed into a train catastrophic oscillations on the sea surface close to coastal zones. After the tsunami wave, the coastal structure undergoes some changes, and these changes will directly affect in the marine ecosystem. The sediment structure is formulated based on a previous approaching model built by Bruce E. Jaffe and Guy Gelfenbuam, 2007. (A. Daberdini, Rr. Ormeni, 2013).This calculation model is approached based on our coastal structure. The difference on the deposit granule size has more impact on the tsunami wave speed, rather than its thickness. The result of this study shows how to built an approximate model for the structuring that the Albanian coast may undergoes by the seismic activity, which in some cases may develop tsunami with marine dimension. The Physical structure may damaged by the force of the wave itself, physical removal of flora and fauna and increased sediment load which could kill sediment sensitive species and sea grasses by smothering. Chemical changes may included saltwater intrusion, eutrophication (enrichment) of the water resulting from increased runoff, raw sewage and decomposition of flora and fauna. Non biodegradable waste such as plastics may contribute to a buildup in marine debris.

Key words: generation, tsunami, Adriatic and Jonian sea, effect, marine ecosystems

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OCULAR INVOLVEMENT IN ANKYLOSING SPONDILITIS

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ABSTRACT

Ankylosing spondylitis is a chronic inflammatory disease pertaining to the group commonly labeled spondylarthritides, a heterogeneous cluster of disorders characterized by enthesial and synovial involvement of both axial and peripheral skeleton. Inflammation in AS usually starts at the sacroiliac joints at early stages and may involve the axial skeleton at later stages of the disease. Extra-articular manifestations are not uncommon and patients with AS may also suffer from: acute anterior uveitis, conduction abnormalities and neurological complications due to fractures. This study aims to present prevalence of ocular involvement in a group of patients with AS. This is a retrospective study of the charts of 90 patients, diagnosed with AS based upon the modified New York diagnostic criteria. Trained rheumatologists diagnosed these patients by examining them physically; reviewing theirs x-rays in order to assess the presence of sacroiliac arthritis, bamboo spine and syndesmophytes. All relevant biochemical and immunological tests have been ordered and evaluated. Trained ophtalmologists examined unilateral eye pain and redness, photophobia and increased lachrymation and all other ocular symptoms. There were 79 (87%) men and 11 (12%) women in the group with a gender ratio 7.19. The mean age of patients was (34.35 ± 10.53) and disease duration (8.92 ±7.20). In total there were 12 cases with acute anterior uveitis (13.3%) in this group of patients. Ocular involvement is a common extra- articular involvement in patients with AS. Acute anterior uveitis typically presents with unilateral eye pain and redness, photophobia and increased lachrymation and the disorder tends to reoccur sometimes in the contra-lateral eye. Patients with AS should undergo routine ophthalmologic examinations because if the eye is left untreated or if treatment is delayed, posterior synechiae and glaucoma may develop.

Key words: photophobia, posterior synechiae, glaucoma

Vol. 5 (3): 399- 406 (2015)

CREATING HUMAN LANDSCAPES IN LAKE SHORES - THE CASE OF SHKODRA LAKE

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ABSTRACT

Lakes have always been suitable environments for the development of settlements, especially urban ones, and a permanent source of welfare for human life. Depending on their geographical position, origin, orographic qualities and their water quality, lakes have contributed to the economic and territorial development of lakeshore settlements. Otherwise, human activity has affect the natural environment, due to the settlements development and exploitation of constituent lake's elements for benefits. Based on typical lakes position, accessibility, level of their human use, the local or regional communities, in their strategies for development or territorial planning tend to define the lake shores as natural landscapes, recreational or economic landscapes; this choice provides on creating landscapes and the perspective of lakeshore environment.Thus, territorial development differs dependence on physical qualities or economic activities of lakeshore areas.

Key words: lakeshore areas, economic activity, natural and human landscape

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THE DETERMINATE OF THE SERUM MARKERS FOR LIVER CANCER THROUGH ELISA AND CHEMILUMINESCENCE IMMUNOASSAY

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ABSTRACT

Tumor Markers comprise a wide spectrum of biomacromolecules synthesized in excess concentration by a wide variety of neoplastic cells. The markers could be endogenous products of highly active metabolic malignant cells or the products of newly switched on genes, which remained unexpressed in early life or newly acquired antigens at cellular and sub-cellular levels. The appearance of tumor marker and their concentration are related to the genesis and growth of malignant tumors in patients. An ideal tumor marker should be highly sensitive, specific, reliable with high prognostic value, organ specificity and it should correlate with tumor stages. However, none of the tumor markers reported to date has all these characteristics. Inspite of these limitations, many tumor markers have shown excellent clinical relevance in monitoring efficacy of different modes of therapies during entire course of illness in cancer patients. Additionally, determination of markers also helps in early detection of cancer recurrence and in prognostication. 93 patients with hepatitis were determined the serum markers with both the ECLIA and ELISA, and then compared with pathology results separately. Both the detection results of ELISA and ECLIA can reflect that the patient's liver fibrosis from hepatitis to liver cirrhosis aggravated gradually. Compared with ELISA, the results of ECLIA and pathology have a better correlation.The detection of liver serum markers by ECLIA could indicate the better the response of the state of liver fibrosis.

Key words: ELISA, ECLIA, liver tumor, markers.

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MICROBIAL CONTAMINATION OF SEAWATER FROM THREE MAJOR BEACHES IN VLORA, ALBANIA

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ABSTRACT

The presence of faecal contamination in samples of seawater collected from three major beaches in Vlora: (Plazhi i Ri, Akademia e Marinës, Plazhi i Vjetër, Kabinat), was evaluated during the period of January 2014 to August 2014. Samples were evaluated for faecal coliforms (FC) and faecal streptococci (FS). Statistical analysis of the results demonstrated higher concentrations of faecal coliforms and faecal streptococci during summer. Akademia e Marinës beach had the highest incidence of faecal indicators (FC and FS), respectively 100% of samples, followed by Plazhi i Ri (27.3% and 45.5%), while Plazhi i Vjetër, Kabinat was in compliance with the Guidelines. The high concentrations of faecal indicators during summer indicate that there is a health risk to bathers, especially Akademia e Marinës beach which is highly polluted. Preventive measures such as education campaigns and some management actions, as seawater and beach quality monitoring and assessment are important precautionary measures.

Key words: faecal contamination, seawater, faecal indicators, Vlora beaches, preventive measures

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PHYTOREHABILITATION OF THE CONTAMINATED AREA FROM HYDROCARBURE AND HEAVY METAL

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ABSTRACT

Oil industry activities have influenced environmental pollution in general showing direct impacts on ecosystems and living creatures. Soil performs various important and complex functions such as filtering, buffering, storing and transforming system, thus protecting the global ecosystem from negative effects of different contaminants. Biological process depends on the movement of micro elements and energy transformations. The ecosystems supply with the majority of food elements for fauna is provided through the surface layer of the earth. The present study aims "to identify and assess the environmental situation in Patos-Marinza industrial area as well as the environmental risk related to environment users. The study basic hypothesis is: "Patos-Marinza oil industry environment is polluted by hydrocarbons with impacts on the flora, fauna and man health". The objectives of this study are: the identification of environmental aspects of oil pollution on flora and fauna of the area under study". Plants may accumulate trace elements, in particular heavy metals, in their tissues, thanks to their large capacities to adapt to the different edaphic features of the environment. Therefore, plants are the intermediate reservoirs through which the trace elements moves from the earth and partially from water and air towards humans and animals.

Key words: soil, phytorehabilitation, heavy metals, hydrocarbons, food chain.

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EXTRACTION OF ESSENTIAL OILS FROM *SALVIA OFFICINALIS L.* LEAVES WITH DIFFERENT EXTRACTING METHODS

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ABSTRACT

Salvia officinalis L. is well known as an aromatic and medicinal plant in Albania. Several studies suggest that *Salvia officinalis L.*, in addition to treating minor common illnesses, might potentially provide novel natural treatments for the relief or cure of many serious and life-threatening diseases such as depression, dementia, obesity, diabetes, lupus, heart disease, cancer or antibacterial treatments. The most common methods used for obtaining extracts of essential oils are water distillation, distillation with organic solvents such as hexane, ethanol, methanol and extraction with liquid CO_2 under pressure as well. The extracts fractions obtained by these methods are of interest especially in the fields of pharmacology, cosmetic, medicine, food chemistry etc. In this study the extraction of essential oil from *Salvia officinalis L* is carried out by using an organic solvent (hexane) and liquid CO_2 solvent under pressure at 40^0C. The essential oil extracts are analyzed by thin layer chromatography. The amount of essential oil and the overall yield obtained by hexane distillation method is lower than that obtained by CO2 extraction method. These findings demonstrated that the amount of S. Officinalis oils obtained by CO2 extraction method is optimal, making that suitable for a possible use in pharmaceutical purposes.

Key words: *Salvia officinalis L*, essential oil, CO_2 extraction, hexane extraction, thin layer chromatography

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THE EFFECT OF EMIGRATION IN POPULATION STRUCTURE,CBR, IN NATURAL INCREASE OF POPULATION OF KOPLIK

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ABSTRACT

This study is done in the Koplik Municipality. It is built a database for 20000 inhabitants of Koplik Municipality where it is included the year of birth, the year of marriage and the year of death. From this database are taken datas, that are used to built the population pyramid. It is concluded, a rapid increase of age of population. The mean age of population has increased from 27.79±19.75 in 1990 year to 35.13±20.83 in 2013 year.The natyral increase has obvious decrease for period, 1990-1999,(KPRN= 1,754±0.202)to period 2000-2013(KPRN = 0.642±0.842).All that has concluded in negative natural increase -1.76 in 2013 year and also in 2014 year. The main factor that has caused this situation, it is a drastic change of CBR, that is obvious in period 1990-1999(CBR= 23.272±2.5),compared with the period 2000-2013(CBR=12.824±4.94), concluded with drastic increase about 2.7,in 2013 year. The decrease of CBR, is especially caused from decrease number of female and male in reproduction age, caused mainly from emigration ,associated from decrease in TFR-value (3.2845±0.328,in period 1990-1999 to 2.884714±0.589 in period 2000-2013),in conditions of almost constant mortality (. 5.617995±1.82 in period 1990-2000 to 5.276±1.476 in period 2000-2013). The reduction of % individuals in reproduction age,is a direct result of mass emigration of new generation 15-20 years old especially ,after 1997 year and ongoing. The negative effect in family structure,is result of the fact that most of emigrants are male,that has caused not balanced sex-ratio,the last few years,about 0.99 for all population,and 0.89 for reproduction age 20-40 years old.The reduction of population has reduced the density of population and expected to have positive impact in enviroment.

Key words: Koplik city, population pyramid, CBR, negative natural increase.

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DETERMINATION OF HETEROSIS AND HETEROBELTIOSIS FOR PLANT HEIGHT AND SPIKE GRAIN WEIGHT OF F1 GENERATION IN BREAD WHEAT

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ABSTRACT

The aim of research was to determinate mode of inheritance level of heterosis and heterobeltiosis for plant height (PH) and spike grain weight (SGW) from parents into the F1 generation, in order to create and develop desired genotypes for particular purposes, such as bread wheat and food production. In the programs of breeding and development of new wheat genotypes, the most important stage is pre-breeding and selection of parents including in the cross breeding, to obtain F1 generation. Heterosis to the mid-parent (Ht) and heterobeltiosis to the better-parent (Hb), were estimated for 20 crossbreeding between wheat cultivars and genotypes, from 10 new genotypes in F1 generation. Parents and F1 generation were evaluated under experimental field rainfed conditions, using randomized complete block design (RCBD) in three replications. Positive and negative significant heterosis (Ht) was recorded for PH in F1 genotypes G-10 (27.31 %) and G-2 (-16.75%), and for SGW in genotypes G-8 (56.70%) and G-2 (-29.51%). The significant results for Hb were recorded for PH in F1 genotypes G-8 (8.72%) and G-2 (-34, 05%), and for SGW in genotypes G-8 (55.10%) and G-2 (-53.39%). With appropriate selection of parents with genetic variability, it is possible to develop F1 wheat genotypes possessing distinct superiority over the mid–parent and better parent.

Key words: Heterosis, heterobeltiosis, parents, spike, plant, F1 generation.

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INVESTIGATION OF ISOTHERMAL PARAMETERS OF DYE ADSORPTION ONTO ACTIVE CARBON

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ABSTRACT

The fact that active carbon adsorps colourants and heavy metals has been known for a long time and thus it is used as adsorbant in removal of such pollutants. In this study, the capacity of active carbon in removal of colourant was investigated. As active carbon, Zivzik pomegranate from Siirt district of TURKEY was used and removal of colourants of Methylene Blue and Crystal Violet was studied. Active carbon was prepared with ZnCl2 by chemical activation. BET surface area, total surface volume and surface area of active carbon were measured by hte istrument called BET. In our study, adsorptions Methylene Blue and Crystal Violet colourants to active carbon at 45°C were evaluated for four different initial colourant concentrations of 200, 400, 600 and 800 mg/L graphically.

Key words: Dye, Clay, Adsorption, Isotherm

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CARDIAC MANIFESTATIONS IN PATIENTS WITH ANKYLOSING SPONDYLITIS

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ABSTRACT

Cardiac involvement in ankylosing spondylitis may be clinically quiet or may cause considerable problems. Some of the most common cardiovascular manifestations observed in AS are: valvular disease, conduction disturbances and congestive heart failure due to decreased ventricular function. This study aims to determine the prevalence of cardiac disorders in AS patients with high disease activity. This is a cross sectional study of 42 patients diagnosed with ankylosing spondylitis. All patients received complete physical examination with a heart and lung auscultation and an electro-cardiogram (ECG) to identify conduction disturbances and echocardiography to identify structural disorders. The study included 38 men and 4 women, with a gender ratio of 9.5. The average age of onset was 23±5 years. In the majority of cases the disease followed axial involvement first (low back pain and/or buttock). The extra-articular manifestations were present in 52% of cases. 10 patients showed cardiovascular involvement - 2 patients showed aortal regurgitation, five patients had mitral regurgitation, two patients had left anterior hemiblock and one had atrial fibrillation, one patient presented an array of pulmonary insufficiency. The average time of onset of cardiac involvement was 9±4 years. Cardiac involvement in ankylosing spondylitis is seen more frequently in men, especially in the old cases. The most common disorders are valvular disorders (aortic, mitral and tricuspid insufficiency) and conduction disturbances (left anterior hemiblock, right bundle branch block, sinus bradycardia, and atrial fibrillation). Patients with AS should be screened with echocardiography and electrocardiography.

Key words: patient, cardiovascular manifestation, physical examination

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GOAL PROGRAMMING AS A METHOD UTILIZED IN PRODUCTION PLANNING AT THE FARM LEVEL

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ABSTRACT

Production programming on an agricultural farm through mathematical methods aims at mapping the available factors of production and analyzing the production planning on the farm in order to achieve the optimal economical results (profit, income) and optimal evaluation of the available factors of production (increase in the employment rate, use of the agricultural machinery etc.). In this article we will be introducing a method that will help us find the optimal production plan of a given farm as well as the optimal distribution of the available factors of production using the multiple-criteria models. The model to be used is designated as 'goal programming'. The application of the model will be implemented across eight agricultural farms. By applying the method of goal programming we intend to study the role of programming of the agriculture production factors and introduce a method for a smooth organization of the agricultural production across these farms. We intend to prove that the utilization of some goals in the decision-making process leads to better choices concerning the production planning on the farms.

Key words: goal programming, production plan, available factors.

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POTENTIAL ESTIMATION AND GHG REDUCTION OF A WIND POWER SYSTEM IN ALBANIAN SOUTH COAST

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ABSTRACT

Wind energy is one of the most environmental friendly form energy. In recent years, the demand for electricity in Albania is growing rapidly. The region of Albanian south coast, thanks to its geographical position, has a good potential of the wind energy sources. The aim of this paper is to determine the wind energy potential as a clean energy for electricity generation in Albanian south coast. A technical and cost-effective assessment of electricity generation from a 1 kW off-grid wind turbine is carried out. Wind turbine is added to the base case 7 kW diesel generator/battery system. The wind energy potential and environment impact in two sites (Vlora and Saranda) in different heights are analyzed. The analyses are based on the RETScreen International Clean Energy Project Analysis Software and NASA related location databases. Results show that the capacity factor varies between 19.2%-20.8%. The total initial costs of investment are $5500. Simple payback and equity payback varies between 3-4 years. The net annual GHG emission reduction varies between 2.1-2.3 tCO_2 per year. Costs, financial and emission analysis of proposed wind energy system show significant results for investment in this region.

Keywords: Clean energy, wind energy, economic impact, GHG reduction, RETScreen.

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DETERMINATION OF PHENOLIC COMPOUNDS IN GROUNDWATER BY SPECTROPHOTOMETRY

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ABSTRACT

Phenolic compounds are among the most important contaminants present in the environment. Although they can be originated naturally due to the degradation of humic substances, tannins and lignins, many industrial processes, including production of drugs, textiles, dyes, pesticides and paper, are the main sources of these compounds in the environment. As a result of these applications, they are found in soils and sediments and this often leads to ground water contamination. Owing to their high toxicity and persistence in the environment, both, the US Environmental Protection Agency (EPA) and the European Union have included some of them in their lists of priority pollutants. The present study was intended to determine total phenolic compounds content in groundwater of selected wells in the oil-field of Patos-Marinza area using three spectrophotometric methods: direct spectrophotometric method, chloroform extraction method and ion-exchange spectrophotometry method. Results indicated that the groundwater samples showed high levels of phenol relative to the maximum allowed limit reported by the Environmental Protection Agency (EPA) and the World Health Organization (WHO).

Keywords: phenol, spectrophotometry, groundwater

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MICROBIOLOGICAL PARAMETERS IN ISHMI RIVER

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ABSTRACT

Tirana and Lana Rivers are both emissary of Ishim River, so the accumulation is more evident in the water of Ishim river. Also a lot of private industrial economies are discharging industrial wastes in the rivers "Ishim", " Gjola" and " Zeza". It is made a specific and detailed study with the focus of microbiological monitoring, in order to evaluate the real conditions of Ishim River. There are assessed *Fecal Choliphormes* that are the most fundamental indicators for the fecal pollution by waste waters. For the determination of *Total Choliphormes* we used MPN method. We took samples in 5 (five) stations that are presented in the map. All data are elaborated in a statistical way and pressented by graphics and tables. Dates describe the microbiological situation o f Ishim River .Ishim River is one of the most polluted in Albania. The article gives a contribute in the assessment of water rivers pollution by the anthropogenic factor and in the microbiological quality of waters in Ishim River with two branches "Gjola" and "Zeza" in Fushe-Kruja Region.

Key words: indicators, pollution, waste waters, MPN, microbiological quality.

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AN ASSESSMENT OF THE QUALITY OF VARIOUS BOTTLED MINERAL WATER MARKED IN TIRANA (ALBANIA) DURING 2014

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ABSTRACT

Due to the growing demand for bottled water a study was undertaken to determine the quality of different brands. The periodical analysis of bottled drinking water is very essential to ensure that the water is safe and can be consumed by humans. Seventeen brands of domestic bottles water (Alpin, Akull, Spring, Tepelena, Lajthiza, Kristal, Dukat, Fontana, Trebeshina, Selita, Qafshtama, Tirana, Kond, Acqua Panna, Acqua Vera, Evian, Vikos) were collected during the first semi quarter of the year 2014 from the supermarkets and food stores in Tirana city, Albania. The objective of this study was to compare the accuracy of the concentration of minerals contents mentioned at the manufacturer labels of the different of different bottled drinking water. As well as to compare the chemical compositon of such bottled water with drinking water standard of EC and WHO. In conclusion, this study showed that the concentration of all analyzed elements in bottled water were within the WHO concentration guidelines and below the maximum contaminant levels (MCL) established by the US EPA, (2004).

Key words: assessment, quality, bottled water, water quality, WHO

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VITAMIN C AS CORROSION INHIBITOR OF 36CrMo STEEL IN HYDROCHLORIC ACID SOLUTION

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ABSTRACT

Corrosion is a naturally occurring phenomenon that through chemical or electrochemical reactions changes the properties of both the metal and the environment he is in contact with. Green inhibitors have been widely used recently to control corrosion, because apart from providing good protection at low cost, they are environmental friendly. The aim of this paper is to study the role of vitamin C as corrosion inhibitor of 36CrMo steel in hydrochloric acid solution. The inhibition ability of vitamin C has been tested for different concentrations of HCl solution and inhibitor as well, at different temperatures, using the weight loss method. The results showed that the corrosion stability of 36CrMo steel increases when increasing the concentration of the vitamin C and decreases with acid concentration. The inhibition efficiency decreases with the temperature.

Key words: corrosion, 36CrMo steel, vitamin C, green inhibitor

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BUILDING FAÇADE MATERIALS AND THEIR ECOLOGICAL IMPACT - COMPARATIVE ANALYSIS OF URBAN LEVEL REFERRING TO RAPID DEVELOPMENT CONSTRUCTION IN ALBANIA

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ABSTRACT

Surveys in recent decades on materials applied in buildings indicate clearly for sustainable materials as a long term solution. Initially applying these materials in suburban areas with specific climatic conditions and for temporary use buildings. Nowadays we find ourselves in front of applications of sustainable materials also for polluted urban areas. Sustainable materials applied in residential buildings, multi-storey buildings, commercial buildings, and not only but also in urban areas as a cover of urban spaces, urban connections etc. Wood and greenery are dominating building facades of recent decades in the world. But which is the situation that characterizes material choices in building constructions for the last two decades in our country? What is currently happening with the selection of materials in building construction and building facades in our capital city as a metropolitan one? Multi-storey buildings before the 90s speak clearly for the massive use of brick as a constructive material and facades materials. While buildings after the 90s clearly represent the "concrete structure's phase" without forgetting alucoband panels ,marble tiles and glass surfaces applications. In some other cases studies reconstruction and restoration phases observe a deviations from sustainable materials such as wood and green patterns previously used in building facades. In another survey, projects planned for the coming decades present the use of sustainable materials but not in considerable percentage. While in comparison with contemporary applications it is insufficient because any development and every building must be part of sustainable design with sustainable materials and sustainable technologies.

Keywords: sustainable materials, building facades, concrete, polluted urban areas