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EVALUATION OF A BLENDED SATELLITE IN-SITU SNOW DEPTH ANALYSIS OVER MOUNTAIN TERRAIN

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ABSTRACT

Operational snow depth analysis is utilized for regional snow assessments over a variety of temporal scales, providing important information to water management planners and policy makers. Another use of snow-depth-based analyses is for initialization of snow states in numerical weather prediction (NWP) models, with implications for predictions of the meteorological atmospheric variables. A blended snow depth analysis based on optimal interpolation of satellite and in-situ data is evaluated over mountain terrain. The method uses a satellite estimate of snow depth as first guess and updates it by blending it with in-situ snow depth from surrounding stations. The technique is applied to snow depth retrieved from AMSR2 onboard the GCOM-W1 satellite and in-situ snow depth obtained from NOAA's Global Historical Climatology Network. Next, the utility of the AMSR2 satellite snow depth and the blended output are evaluated over Western US during the winter months of January and February 2017. To investigate the potential benefit of the technique for NWP model applications, snow depth obtained from NOAA's Global Forecast System is also inter-compared with the satellite and blended outputs. Results indicate that this blending approach greatly enhances the performance of the satellite product over mountain terrain, making it suitable for reliable large-scale snow assessments over these regions. Moreover, the technique generates more accurate blended output compared to forecast snow depth from NOAA's Global Forecast System, demonstrating the benefit of the technique for NWP model applications.

Keywords: snow depth; optimal interpolation; satellite remote sensing; in-situ data

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FACTORS AFFECTING MOBILITY OF ZINC IN SOILS OF UKRAINE

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ABSTRACT

Zinc (Zn) deficiency is the most common problem of micronutrient deficiency on our planet. This problem is also relevant for Ukraine, as soils are insufficiently provided with Zn, plants are deficient, respectively, and insufficient quantity of Zn is contained in food, which leads to human diseases. Our research showed that the total zinc content in soils increased from the north to the south of Ukraine (Polissya < Forest-Steppe < Steppe): in sod-podzolic soil the Zn content was 40 mg kg^{-1}, in dark gray podzolic - 45 mg kg^{-1}, chernozem typical - 48 mg kg^{-1}, chernozem ordinary - 58 mg kg^{-1}, dark chestnut - 70 mg kg^{-1}. The content of Zn mobile forms, on the contrary, was subject to inverse dependence - the highest level was observed in the soils of Polissya - 9.5 mg kg^{-1}, the lowest in the soils of Steppe - 0.5 mg kg^{-1}. Zn was more firmly fixed by the soils of chernozem-type, higher mobility was observed in soils with pronounced podzolic processes. Zn mobility depended from the properties of soil: pH of the soil solution, the amount of organic matter and clay minerals. Zn mobility increased with increasing soil acidity, increasing the amount of organic matter and clay fraction. There was a close inverse correlation between these indicators and Zn mobility: the pairwise correlation coefficients (r) ranged from - 0.861 to - 0.991. Agrotechnological methods of winter wheat growing reduced the quantity of potentially mobile Zn compounds in the soils of Polissya, Forest-Steppe and Steppe of Ukraine in compared to the natural background. However, mineral and organic fertilizers mainly increased their content, as well as intensified the transfer of Zn from the soil to wheat plants, as evidenced by the biological absorption coefficients which were > 1.

Keywords: agrochemical parameters, mobility, soil, climatic zones, zinc.

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EFFECTS OF CLIMATE CHANGE AND DROUGHT IN KONYA: A REVIEV

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ABSTRACT

The environment of our planet likes simply like a greenhouse. Practically 50% of the sun's lights arriving at the earth are reflected from the earth. Atmospheric climate is described via carbon dioxide, methane, water stream, ozone, nitrogen oxides, and so others, which are additionally called ozone depleting substances. On these gases, they reflect a portion of the sun beams reflected from the earth back to the earth. The effect of environmental change isn't only an expansion in temperatures. Plants, creatures and biological systems just as human networks are at genuine hazard because of components, for example, dry season, floods, serious tropical storms, expanded recurrence and impact of extraordinary climate occasions, raised sea and ocean water levels, expanded causticity of the seas, softening icy masses. An impermanent dampness lop-sidedness is called dry season territorially. Its long-haul indication permits time to take the fundamental measures for dry season, however dry spell is the most noticeably terrible calamity after some time. The drought, which can manifest itself everywhere after the moisture balance deteriorates, can be felt even in areas with high precipitation. Drought has been effective in Iran as in many countries around the world and the duration of drought has been constantly increasing in the last 20 years. As a result of the study, it was determined that the yield of dry products will decrease in the future. As a precaution, it is recommended to complete the dams and ponds, transfer water between the basins and switch to modern irrigation systems. Drought has a complex structure that affects many sectors of the economy and extends this effect far beyond regions with drought. The reason for this is that water is an indispensable factor in production. The majority of the Konya Closed Basin water supply is supplied from groundwater due to the low level of above-ground water sources, limited alternative irrigation sources or full efficiency. Konya Closed Basin has significant water potential. However, the increasing agricultural activities in recent years have caused excessive and unplanned water use, and thus the surface and groundwater levels have decreased.

Keywords: Climate change, Greenhouse effect, Drought, Temperature increase, precipitation

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EFFECT OF FERTILIZERS SYSTEMS ON ACCUMULATION OF HEAVY METALS IN GRAY FOREST SOIL

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ABSTRACT

Mobile forms content of plumbum and cadmium at systematic application of organic and mineral fertilizers in field crop rotation on gray forest soil has been investigated. It was found that the use of fertilizers affected the accumulation of these indicators in the soil relative to the initial state, but the maximum concentration of maximum permissible concentrations (MPC) was not observed. With the organic fertilizer system (60 t/ha of manure) there was a decrease in mobile plumbum by 33% compared to its initial content in the soil. However, it should be noted that the coefficient of technogenic concentration for plumbum was more than one (Kc> 1), which indicates the process of its accumulation in the soil to the background level. The highest indicator of the coefficient of technogenic concentration for plumbum (Kc = 2) was observed with the joint application of organic and mineral fertilizers (60 t/ha of manure + $N_{100}P_{60}K_{100}$). The distribution of mobile plumbum and cadmium according to the soil profile depended on the peculiarities of soil genesis - there was a tendency to increase stocks under agrochemical load in the norm $N_{100}P_{60}K_{100}$ against 60 t/ha of manure, in the lower part of illuvial humus and upper – illuvial horizons at a depth of 50–80 cm, as well as a decrease at the boundary of humus-eluvial and illuvial humus horizons – 25–45 cm. Studies of the content of mobile forms of plumbum and cadmium in the grain of winter wheat indicate the stability of levels of contamination by these elements of the grain within the permissible concentrations of MPC.

Keywords: heavy metal, soil, toxic effect, plants, soil fertility, fertilizers.

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A STUDY ON DIFFERENCES OF ALBANIAN *Salvia officinalis* L. ESSENTIAL OILS DEPENDING ON GEOGRAPHICAL POSITION

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ABSTRACT

Essential oil percentage content of wild *Salvia officinalis* L. isolated with hydro distillation method was explored depending on geographical area. Chemical composition of essential oil collected in different areas of Albania located in North and South was assessed. The sampling was extended in 11 regions of Albania collected during the year 2017. Samples were collected on during summer in the wild. Hydrodistillation method has been applied for the extraction of essential oil in leaves. The oil was isolated in a Clevenger type apparatus and analysed with GC-FID and GC MS/MS QQQ. The samples were immersed in 500 ml water and boiled using distillation flask heater for 3 hours, at boiling point temperature. The plant/liquid ratio used for this study was 1:10 (g:ml). The yield of essential oil in relation to the geographical position shows small changes from point to point. The percentage of essential oil level for the analyzed samples varies between 1.8 - 3.0%. All eleven samples were used for oil profiling via GC-FID/GC MS analysis but only two of them, North and South region (Koplik/M2 and Dhembel/M10), were chosen in order to compare essential oil composition between north and south of Albania. Around 33 chemical compounds were analyzed and identified according to their relative retention time and mass spectra. The main components were α-thujone (20-35%), Camphor (18-44%), 1,8-cineole (8-15%).

Key words: essential oil, *Salvia officinalis* L, hydrodistillation, extraction, sampling, chromatographic

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Staphylococcus aureus STRAINS ISOLATED FROM BOVINE MASTITIS SENSITIVITY TO ANTIBIOTICS

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ABSTRACT

The aims of this work was to study the sensitivity of *Staphylococcus aureus* strains isolated from bovine mastitis antibiotics. A total of 22 pure strains of S. aureus were collected from 58 quarter milk samples from 29 (69,04%) dairy cows detected with subclinical mastitis by California mastitis test (CMT). The isolates were subjected to an antibiogram. The tests showed that one strain among the isolates tested is MRSA (Methicillin resistant *Staphylococcus aureus*). This MRSA exhibited cross-resistance to all betalactamines which extends to other families of antibiotics. SASM strains also showed strong resistance. vis-à-vis penicillin (95,23%) and tetracycline's (90,47%) Resistance was also recorded vis-à-vis; the combination amoxicillin + clavulanic acid (47,61%), erythromycin (19,04%), the combination trimethoprim + sulfamethoxazole (4,76%) and bacitracin (9.52%). neomycin, gentamicin, ciprofloxacin and clindamycin were active on MRSA's. The high prevalence of subclinical mastitis and multi-resistant S. aureus strains testifies to the need for an effective control strategy based essentially on the early detection of subclinical mastitis, the identification of the causative agent and the study of its sensitivity to common antibiotics.

Keywords: Mastitis, SARM, Antibiogram, SASM, *S. aureus*.

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COMPARATIVE ANALYSIS ON THE CALCULATION METHODS OF THE MOMENT OF THE FIRST CRACK ACCORDING TO THE ALBANIAN CODES AND EUROCODES

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ABSTRACT

When Albania will be part of the European Union, Eurocodes should be used by Albanian engineers as technical codes for the structural and geotechnical design of various engineering works in the Albanian Republic. For several years now, Albanian engineers have been using Eurocodes in addition to the National codes. The main aim of this paper is to present the methodologies to determine the bending moment, which causes the first crack, based on the Albanian codes and Eurocodes. It is also aimed to highlight the differences and the similarities between the two codes, as well as the factors that affect the size of the bending moment of the first crack. Numerical examples, graphs, results, conclusions, recommendations, etc. will be shown at the end.

Keywords: bending moment of the first crack (M_{cr}), Albanian Codes, Eurocodes, EC 2, serviceability limit state, cracks.

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RESEARCH REGARDING CONSUMER PURCHASE AND NEED FOR VEGETABLE PRODUCTS IN THE KOSOVO MARKET

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ABSTRACT

The study was conducted in five municipalities of Kosovo. Sampling was selected by random method. The data are provided through direct interviews with consumers of vegetable products, all of them, over 18 years of age. The results show that the vegetable products from tomato, pepper, cucumber, potato and cabbage are preferred to be consumed by almost all members of the Kosovo families with 100% of respondents. Consumption of processed vegetable products like pickles, ketchup and ajvar is accepted 100% by consumers. Super-markets and green markets are the favourite places for consumers when shopping for vegetable products. The main aim of our study was to investigate whether the consumption of vegetable products, is determined by the way of life of families and consumers, segmented by age, gender, occupation, income level, employment status, family size, etc. More than 3/4 of respondents stated that with the increase of their income, they are willing to spend more money to buy vegetable products. About 8/10 of consumers interviewed, have stated that they prefer vegetable products produced in Kosovo. During our study, as very important factors are shown: price, product quality and origin. Consumers pay greater attention to the production date and origin of the product. According to the results of the survey, consumers' participation in the purchase of vegetable products by gender was: males with 37%, both genders (female and male) participated with 2% and the participation of females in the purchase of products is 61%.

Keywords: vegetables, vegetable products, consumers.

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DETERMINING THE NITROGEN BALANCE OF WHEAT FERTILIZER AND POTENTIAL ENVIRONMENTAL CONSEQUENCES IN THE FIELD OF DUKAGJINI

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ABSTRACT

Wheat fertilization represents one of the most complex problems in mineral nutrition of this strategic crop. Therefore, the purpose of this research is to determine a nitrogen balance in wheat culture having in consideration the environmental consequences when applying fertilizers. During this study the objectives are focused on: (1) finding optimal doses for wheat fertilization as a function of its predetermined yield, (2) predicting, determining and modifying the need for nitrogen fertilization in the context of a predetermined yield through the DRIS system (*Diagnostic and Recommendation Integrated System)* and (3) studying the environmental effects when applying different doses and modes of nitrogen fertilizer to wheat. It is known that plants absorb nitrogen, mainly in two forms; $NO_3^-$and NH_4^+. Nitrites, in general are more concentrated that ammonia forms, and thus, they are easier to absorb from plants through mass flow and diffusion phenomena. However, plant preferences for one or the other form of nitrogen depend on the developmental phenotypes of the plant, its type, theionic environment and other factors. Grains (Cereals), corn, rice, legumes, etc. use both forms.

Key words: Ammonia Nitrogen, Atmospheric Nitrogen, Crop Production, Dose Optimization, Environmental Consequences.Mineral Nitrogen, Nitrogen nitrate, Wheat Fertilizer Balance.

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DETERMINATION OF THE METHANOGENIC POTENTIAL OF CASSAVA (*MANIHOT ESCULENTA CRANTZ*) WASTE FROM "ATTIEKE" PRODUCTION IN YAMOUSSOUKRO CITY, COTE D'IVOIRE

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ABSTRACT

This work focuses on the study of methane productivity from cassava waste (manihot esculenta crantz) from the production of "attiéké" in the city of Yamoussoukro. These wastes are residues recovered from the "attiéké" production units of women's cooperatives in the city of Yamoussoukro. Five reactors or biodigesters (R1, R2, R3, R4, and R5) were used for the study and operated at an ambient temperature. The quantities of biogas obtained are 404 ml / kg (R1); 460 ml / kg (R2); 480 ml / kg (R3); 444 ml / kg (R4) and 116 ml / kg (R5). The respective methane contents are 39.6%; 46.1%; 43.3%; 47.7% and 41.4%. Biogas production is high in the wet biodigesters (R1 to R4) and low in the reactor containing only solid waste (R5). These results also show that the methane content of the biogas resulting from each mixture is between 39 and 48%. The anaerobic digestion of effluent-peel mixtures produces more biogas with a higher methane content than pure waste. Thus, the ratio of the effluent-peel mixture influences the productivity of the biogas and its methane content.

Keywords: biogas, methane, methanogenic potential, cassava waste, reactor, biodigester, reactor.

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THE PRESENCE OF ENDEMIC PLANT SPECIES *Achillea alexandri-regis* Bornm. & Rudsky IN PASHTRIK, ADDED VALUE FOR THE FLORA AND VEGETATION OF KOSOVO

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ABSTRACT

During the period 2000-2020 we managed to carry out many research expeditions in Pashtriku Mountain within the territory of the Republic of Kosovo. Within the vascular flora, in these very interesting fields for research, there are many interesting species for the flora of Kosovo. As part of this research, several species of the genus *Achillea* have been found. In particular, the species *Achillea alexandri-regis* Bornm. & Rudsky should be mentioned. This species belongs to the floristic element of the Balkans, while it is a stenoendemic plant species of Kosovo. Based on the information we have, this plant species, has so far been found only in Kosovo, specifically in Oshlak within the Sharri Mountains. We have ascertained the above-mentioned plant species in the high areas of Pashtrik. During the assessment of the situation we found that the species has a small number of individuals. It is known that this species is found in the List of species evaluated according to IUCN criteria in the Red Book of Vascular Flora of the Republic of Kosovo (2013). The presence of this plant species in Pashtrik represents added value for the flora and vegetation of Kosovo.

Key words: Natural ecosystems, Pashtrik, Vascular flora, *Achillea*, Endemic plants, IUCN, Republic of Kosovo.

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BLUETONGUE VIRUS INFECTION IN CATTLE IN SOME PROVINCES OF NORTH-WEST ALGERIA

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ABSTRACT

The aim of this work was to estimate the sero-prevalence and associated with *Culicoides* trapping in study area in cattle. BTV sero-positive from seven provinces in north western Algeria, seven provinces were selected. A total 272 animals included three phases of blood collection in season of autumn were randomly collected for detection of BTV group specific antibodies through competitive ELISA (c-ELISA) for assessment of situation epidemiological by prevalence and presence of *Culicoides* trapping in sites was revealed seropositive. The significant ($p<0,05$) highest prevalence of BTV was recorded in province Oran followed by Mostaganem, Relizane, Mascara, Tiaret, Chlef, whereas, the lowest sero-prevalence for BTV was recorded in cattle in province Tissemsilt, presenting 34,37%, 19,51%, 15,78%, 15,55%, 13,33%, 13,15% and 6,89%, respectively.

Key words: Bluetongue virus, Cattle, Sero-entomology, North-west Algeria.

Vol. 10 (4): 667-670 (2020)

TECHNOLOGICAL QUALITIES OF LOCAL WHEATS FOR BREAD PRODUCTION

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ABSTRACT

Wheat is the most important agricultural crop in the world and in our country. It is the main source of energy, respectively daily calories and of some minerals and B complex group vitamins in human nutrition. Exactly in our country we have an annual production that satisfies the needs of about 57%, and the import depends on its quality and yield. Therefore, this paper has the main object to study the physical, chemical and rheological qualities of wheat cultivated in different regions of Kosovo for bread production; this product which is still mostly consumed in our country. The results of the analysis show that the analysed grains have average physical quality which means that they can be stored and ground without any problem. From chemical qualities such as protein content, respectively gluten is ideal for bread production. Rheological analyses show that we are dealing with doughs with very good water absorption capacity of 59.67 ± 1.364%, as well as with the degree of softening, resistance, energy and maximum viscosity ideal for bread production.

Key words: gluten, physical qualities, rheological qualities, wheat.

Vol. 10 (4): 671-674 (2020)

USE OF SOCIAL MEDIA AND ELECTRONIC SOURCES FOR RECEIVING INFORMATION IN REHABILITATION OF MS PATIENTS

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ABSTRACT

In our days health informatics has a great impact in management of patients with multiple sclerosis (MS). We evaluate three concrete case studies with MS in Vlore City, their knowledge about MS and the impact of rehabilitation in MS, the way and the sources from where they got the information and identifying barriers. This is a comparative study of three cases of patients with MS. The main part of the interview consisted on questions about the use of internet or medical webpages for getting information about their disease. The comparison of patients revealed that only one had information from the internet that had a major impact on the rehabilitation process while it was contrary to the others. The other two patients have not been able to obtain MS information either from social media or from other sources.

Keywords: multiple sclerosis, e-health, rehabilitation.

Vol. 10 (4): 675-682 (2020)

FIRST RECORD OF PTERIDOPHYTE DIVERSITY AT MOUNT MINGAN, GABALDON, NUEVA ECIJA, PHILIPPINES

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ABSTRACT

Pteridophytes, commonly known as ferns, are vascular plants that bear spores which are widely distributed in tropical regions, specifically in humid, sheltered areas. Being neglected most of the time, some members of group are vulnerable and critically endangered. But these plants play a role in maintaining the balance in the ecosystem and could be potential source of economically important compounds. Mingan mountain is a part of Sierra Madre Range National Park and the knowledge of pteridophyte diversity in the area is poor. This study aimed to list the species and assess the diversity of pteridophytes at Mt. Mingan, Gabaldon, Nueva Ecija. Fourteen (14) species of pteridophytes, namely, *Nephrolepis falcata, Pneumatopteris nitidula, Christella arida, Christella acuminata, Nephrolepis cordifolia, Microsorum scolopendria, Microlepia platyphylla, Microsorum membranifolium, Polystichum sp., Davallia solida, Orthiopteris campylura, Microsorum longissimum, Pteris oppositipinnata*, and *Drynaria descensa* were identified to be present at Mt. Mingan. One species, *Microsorum scolopendria*, was found to be vulnerable. In addition, *Pneumatopteris nitidula, Drynaria descensa, Davallia solida* and *Pteris oppositipinnata* were recorded to be endemic in the Philippines. Diversity indices state that diversity of pteridophytes at Mt. Mingan is low. Tree diversity in the sampling area was also found to be low by a related study. According to the barangay secretary of Brgy, South Poblacion, Gabalodon, incidents of timber poaching, charcoal production, and illegal logging were recorded in the site. Mentioned threat is one of the possible reasons for low diversity of pteridophytes in Mt. Mingan.

Keywords: Pteridophytes, Fern, Mount Mingan, Biodiversity, Illegal logging

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INVESTIGATION OF PLANT DESIGNS ON WATER SURFACES IN TERMS OF LANDSCAPE DESIGN

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ABSTRACT

Water has a very important place in garden design. Water creates different ecological living spaces with movement, light and sound, but gives people peace of mind by making them feel different emotions. It creates a different climate and perception in garden designs. Water gardens; waterfalls, creeks, fountains, cascades, garden ponds, ponds and ornamental pools are designed and applied. Environment can be created for aquatic plants and living organisms. Aquatic plants; colors, textures, forms, scents are the most attractive and eye-catching elements of water gardens. However, by using water and aquatic plants together in an environmental arrangement, the reflective feature of the water is emphasized, creating a colorful and sparkling atmosphere and improving the landscape quality. In this study, the use of water in landscaping studies is examined through design principles and examples, and the points to be considered for the use of water gardens are emphasized.

Keywords: Water gardens, aquatic plants, water and landscape, water and garden

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THE RESEARCH OF HEAVY METALS AND PHYSICO-CHEMICAL ANALYSES OF DRAINING WATERS IN PEJA'S LANDFILL

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ABSTRACT

Since ancient times, waste has been burned, reused or deposited without any management criteria. Taking into account all these very harmful elements for the environment, the aim is to research the content of drainage water, and the problem of waste disposal in the regional landfill of Peja to be done according to EU standards, and to ensure minimal environmental impact. A total of 4 samples were taken in this scientific work, in two time periods, divided into two in June, and two in September, where we analyzed them with two different methods of determining heavy metals, which for the purpose have to be compared among themselves based on the presence of heavy metal values and physic-chemical analysis in the Peja landfill. Waste collection is one of the most serious problems of civilization from the municipal point of view, as well as from the commercial, sanitary-epidemiological, construction, hydrological and technological aspects.

Key words: heavy metals, landfill, pollutants, waste collection.

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CONTROL OF DIFFERENT LIGHT QUALITIES ON GERMINATION OF MUSTARD (*Brassica juncea*) SEEDS AND DE-ETIOLATION OF MUNG BEAN SEEDLINGS

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ABSTRACT

Light regulates a wide array of developmental process in plants, two of these processes are seed germination and chlorophyll development. The effect of different light qualities to the germination of Mustard seeds was observed. In addition, observation of chloroplast development was done. After 48 hours of treatment, germination was highest in white LED light and germination was significantly high to seeds exposed blue and red. Absence of light greatly affected the sprouting of seeds with only 42.22 percent germination success. Development of chloroplast was observed in seedling after two hours of exposure in white LED which is comparable to the result obtained in natural light. Chloroplasts did not develop in the seedling exposed to blue light, but chloroplast developed in the plant treated with red light. This suggests that red light predominantly regulates chloroplast differentiation but still the presence blue light is needed supported by the result obtained in treatment of white light. Taken in together, both red and blue lights are essential in promoting germination and chlorophyll development. Moreover, white LED could be used as an alternative source of light in aiming to increase germination of Mustard seeds and induce chlorophyll development.

Key words: LED, etiolation, chlorophyll, Mustard seeds, germination

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MODERN STATE AND DYNAMICS OF FORMATION OF PHYTOCENOSES IN DIFFERENT ENVIRONMENTS OF THE BAIKAL REGION (*Illustrated by central part of western shore of Pre-Baikal*)

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ABSTRACT

The revealed structural-dynamic changes in the formation of vegetation in the Baikal region as an integral part of the monitoring of environmental factors variability with time and space allow to make forecasting projects of a probable development vector of vegetation cover under different physical-geographic conditions – zonal-height, interzonal, interheight belts, extrazonal ones at regional-topologic level of environmental organization.

Key words: vegetation, structural-dynamics organization of phytocoenoses, ecotopes, Pre-Baikal region

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FARMING PRACTICES FOR CLIMATE CHANGE ADAPTATION OF ONION FARMERS IN THE PHILIPPINES

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ABSTRACT

Climate change is one of the most complex issues we are facing today. Farming is affected by the followingeffects of climate change: weather, natural disaster, and occurrence of pest and diseases. This study employed the qualitative approach and revealed the farming practices of onion farmers. Onion farmers in the Philippines are between 38 to 57 years of age, male, married, and with high school level of educational attainment. The respondents described their experienced effects of climate change such as excessive coldness, excessive rainfall, inconsistent weather patterns, increased number of pests due to high humidity and excessive rainfall. Their climate change adaptation practices include adjusting the dates of planting season, constructing irrigation canals to prevent flooding, mulching, and using home-made pesticides. The finding of the study also revealed gaps in the scientific knowledge of onion farmers and it is recommended that interventions be developed to address these gaps. Further, it is recommended that the results of this study be forwarded to other academic, research units, and LGUs, in order to help them craft policies that will help onion farmers as they adapt to climate change.

Keywords: Causes and Effects of Climate Change, Climate Change Adaptation, Collaizi's Method of Analysis, Disaster, Farming Practices Pest and Diseases.

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VULNERABILITY AND RISK ASSESSMENT OF HIGH-RISK AREAS OF CABANATUAN CITY, PHILIPPINES TO FLOOD HAZARD

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ABSTRACT

This study entitled "Vulnerability and Risk Assessment of High-Risk Barangays of Cabanatuan City to Flood Hazard" was conducted to assess the vulnerability and risk of high-risk barangays of Cabanatuan City in terms of exposure, sensitivity and its adaptive capacity. It assessed the number of people exposed, the sensitivity or threat level of each barangay and its capacity to withstand or cope with flooding or its adaptive capacity. The research method used was descriptive analytical method to be able to analyze the degree of vulnerability of high-risk barangays of Cabanatuan City based on its present condition. The data gathering procedure was done through survey form which contains the exposure, sensitivity, and adaptive capacity and was also done through personal interview with the leaders of high-risk barangays. Other data were gathered in the City Disaster Risk Reduction Management (CDRRMO). The statistical treatment used was percentage for the proper scoring of data gathered and weighted mean for the average threat level and adaptive capacity. The scoring was used to determine the vulnerability of the high-risk barangays of Cabanatuan City. The result shows that 3 of the 6 high risk Barangays namely; Barangay San Roque with 612 persons per hectare, Barangay Aduas Sur with 259 persons per hectare, Barangay M.S. Garcia with 205 persons per hectare has a high population density which makes them more exposed to the hazard. The high-risk barangays of Cabanatuan City has a threat level or sensitivity of 2.46 and an average adaptive capacity of 2.67, and a relative vulnerability of 0.92. For the risk estimation the likelihood of occurrence (LOO) got an average score of 6 with a verbal description of frequent or very likely and the Severity of consequence got an average of 3.33 which makes the risk estimation to yield an average of 20 which categorized as "high"'. The study serves as the fundamental of the creation and formulation of the Local Climate Change Action Plan to improve the present adaptive capacity of high-risk barangays to avoid the hazards serious effects in both the community and the environment.

Keywords: adaptive capacity, cabanatuan city, flood hazard, risk assessment, high-risk, vulnerability

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DETERMINATION TO VOLATILE COMPONENTS AND ETHNOBOTANICAL PROPERTIES OF DIFFERENT REAPING TIMES FOR *ORIGANUM VULGARE* SUBSP. *VIRIDE* (BOISS.) HAYEK, NATURAL DISTRIBUTED IN AKSEKI (ANTALYA) PROVINCE, TURKEY

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ABSTRACT

In this study that was conducted in 2018-2020 vegetation period, 49 different volatile components were determined from samples of *Origanum vulgare* subsp. *viride* leaves and flowers, which were collected in 2 different periods: pre-flowering (May) and flowering (June) by SPME (solid-based micro extraction) method. 39 different components were detected in the pre-flowering period (May) and the main components were Linalool (89.02%), Caryophyllene (2.76%) and .β.-Myrcene (2.57%), while in the flowering period (June) 42 Different components were determined and the main components were determined with the ratios of Linalool (89,02%), Caryophyllene (2,76%) and .β.-Myrcene (2,57%). In order to determine the ethnobotanical characteristics of *Origanum vulgare* subsp. *viride*, a survey of 15 questions was conducted with 41 people living in Akseki district with different demographic characteristics, using face-to-face interview method. 68% of the participants consume thyme plant for health and treatment purposes, and 88% for food / meal / spice purposes. 68% of the participants were found to drink thyme tea or consume it as a spice to add flavor to their meals.

Keywords: *Origanum vulgare* subsp. *viride*, Volatile component, Ethnobotany, Linalool, Spice and tea plant

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MANAGEMENT OF MOISTURE RESOURCE POTENTIAL IN AGROCENOSES OF FOREST-STEPPE OF UKRAINE

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ABSTRACT

To define the factors of managing the potential of moisture resources, the regularities of accumulation and use of moisture from soil by agricultural crops while cultivating them in the system of different crop rotations in the Forest-Steppe of Ukraine. The comparative assessment of the productivity of cereal-hoed 10-field rotation demonstrated that in 2010–2015 the yield of dry substance of the main product increased 1.35 times, the yield of fodder units –1.28 times, and that of cereals – 1.23 times. The fraction of the yield of dry substance was 12 % from the total yield which was 2.3 times higher as compared to 1965–1969. The introduction of mineral fertilizers in 5-field cereal-hoed rotation promoted the increase in the yield of fodder units by 35.7 %, cereal units – by 29.1 %. The highest yield from the fertilizers introduced was obtained for tillage, where the yield of fodder and cereal units increased by 56.6 and 60.7 % respectively. Short crop rotations had higher productivity: strong direct correlation (R>0.70) was found between the accumulation of energy in dry substance and the yield of dry substance, fodder and cereal units and the accumulation of energy per 10 t of the moisture used. Regression coefficients for the variables: dry substance, fodder and cereal units, dry substance per 10 t of moisture in the dependence equations were 3.06, 1.25, 7.25 and 2.89 times higher as compared to long crop rotations. It demonstrated the 2.59-fold higher efficiency of forming productivity in short crop rotations and using the total moisture circulation as compared to long crop rotations.

Keywords: crop rotations of different duration, predecessors, rotation norms, moisture provision, soil properties, evaporation, agrotechnical measures, cultivation culture.

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TRENDS OF VEGETATION FORMATION OF SOUTH-EASTERN AND NORTH-EASTERN OF PRE-BAIKAL (*basin of Lake Baikal*)

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ABSTRACT

In this paper there are new information about current structure and tendency of the vegetation formation for some areas of the Eastern Pre-Baikal. The aim of our studies is determining of maim peculiarities of structural and dynamical communities organization forming under the conditions of mutual development taiga and extrazonal steppe with identification of nowadays tendencies of plant communities genesis under the conditions of changing climatic situation and of dynamics of anthropogenic impacts as well. The vegetation cover in this case serves as an indicator for the changing natural situation in the Baikalian region at all.

Key words: trends of vegetation formation, taiga, extrazonal steppe, Eastern Pre-Baikal.

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BIODIVERSITY OF RELICT AND ENDEMIC PLANTS IN SHUTMAN STRICT NATURE RESERVE IN KOSOVO

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ABSTRACT

Shutman Strict Nature Reserve in Kosovo is of great biological and ecological interest because of its distinctive flora and variable environment and landscape. In the present study, 76 endemic and relict species were recorded, belonging to 51 genera and 29 families, and 92.1 % of these species are perennials. Shutman studied flora comprises 55 endemic species, 4 endemic-relict and 17 relicts plants. Out of studied endemic plant species, 48 were Balkan endemics, 7 taxa were subendemics of Balkan and 2 Kosovo endemic species. The most frequent life form was the hemicryptophytes (69.74%), followed by the chamaephyte15.79%) and geophytes (10.52%). The flora was mostly composed of Balkan elements with 36 taxa (47.37%), followed by Boreal elements with 5 taxa (6.58%) and Alpine-Carpathian-Balkan with 4 taxa (5.26%). Results of this study demonstrated that Shutman Maintain is an important center of the Balkan endemic flora in the area of Kosovo and the Balkan Peninsula. The existence of a diverse and rich endemic flora is of great importance in the conservation of biodiversity in this area.

Keywords: Shutman Reserve, vascular plants, endemic and relict plants, life form, refuge.

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GENETIC RESOURCES OF CHICKPEA AND THE EFFECTIVENESS OF THEIR USE IN BREEDING

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ABSTRACT

The article summarizes the characteristics of economically valuable features of a large set of chickpea samples in arid conditions of the steppe of Ukraine. The data on the spread of culture on our planet shows the positive impact of food made from its seeds on human health. A number of genotypes have been identified and described, which combine a significant number of important agronomic traits that are of significant value for breeding. Special attention in the research was paid to the identification of genotypes tolerant to elevated air temperatures and insufficient moisture in the soil. A brief description of the varieties created with the participation of exotic genetic plasma is given. As a result of many years of study of accessions of chickpea, sources of increased seed productivity, large seeds, high protein content, tolerance against pathogens, improved technological qualities of seeds have been identified. Individual genotypes have been identified in which several economically valuable indicators have been improved. It is shown that the combination of traits of samples of different ecological and geographical origin in one genotype has a high probability of obtaining valuable recombinant forms by accumulating positive adaptive genes. A particularly wide variation of breeding material is needed to prevent disease outbreaks and the widespread of pests, the danger of which increases significantly with the homogeneity of the gene pool.

Keywords: chickpea, collection samples, vegetation duration, drought tolerance, protein content, seed size.

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FLORISTIC ANALYSIS OF THREATENED MEDICINAL PLANTS ON THE TERRITORY OF BREDHIK RESERVE, SHARR MOUNTAIN, KOSOVO

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ABSTRACT

This study was carried out to identify the medicinal plants of conservation status on the territory of Bredhik Strict Nature Reserve (Sharr Mountain, Kosovo). Biodiversity of medicinal plants listed in this study represented by 91 taxa that belong to 43 families and 74 genera. Rosaceae and Asteraceae, with 11 and 10 species respectively, are the families by the high number of threatened species. The main genera were *Plantago*, *Prunus* and *Salix* with 3 species each. The species with conservation status by European Red List of Medicinal Plants are 68 species, while in IUCN Red List are included 51 taxa. Hemicryptophytes and perennial herbaceous plants with 38 species and 44 species were dominant on the plants that were the subject of this research. The number of relics species is significant, 20 species (21.98% of the total species number), and therefore area of study has the highest conservation value.

Keywords*:* Medicinal plants, Threatened plants, Biological types, Relict species.