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EFFECTS OF AIR POLLUTION ON AGRICULTURE

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ABSTRACT

In addition to the increase in the temperature of the world due to climate change, air pollution is increasing as a result of human activities. Air pollution is increasing as a result of industrial activities, heating, and motor vehicles. This situation causes disorders in the respiratory, circulatory, and nervous systems in humans. In addition, air pollution does a great deal of harm to the ecosystem. In recent years, it has been observed that air pollution caused by industry and traffic also harms agriculture and deteriorates the quality of the products grown. It has been observed that air pollution causes developmental disorders and decreased photosynthesis in many plant species. Studies shown that grains, which are the main food source all over the world, are greatly affected by air pollution and can harm human health by mixing with the food chain.

Keywords: Agriculture, air pollution, climate change, grains, plants

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APPLICATION OF ECONOMIC-MATHEMATICAL METHODS IN FIELD RESEARCH OF CEREAL CROPS IN THE CONDITIONS OF CLIMATE CHANGES IN UKRAINE IN THE SECOND HALF OF THE 19th – AT THE BEGINNING OF THE 21st CENTURIES

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ABSTRACT

It has been established that the use of effective technologies for growing cereal crops in different soil-climatic conditions of Ukraine is of great importance in the modern conditions of climate change and other stress factors. Such technologies ensure the systematic and comprehensive use of science-based measures affecting the solution of global social problems of humanity, which were caused by climate change and the rf's full-scale war in Ukraine. For this purpose, the wide application of economic-mathematical methods is provided, which ensure the accuracy of obtaining the results of field research, the identification of previously unknown regularities for the favorable growth and development of cereal crops, especially in modern conditions of climate change and other stressful factors. With the use of dispersion analysis, the dynamics of the mutual influence of the main technological factors: varieties and hybrids of cereal crops, crop rotations, tillage, fertilization, plant protection and weather conditions on the productivity of cereal crops in the conditions of climatic changes in Ukraine during the second half of the 19th – the beginning of the 21st centuries were evaluated. The share of mutual influence of the main technological factors and weather conditions on the productivity of the leading cereal, legumes and technical crops in Ukraine is calculated. It was found that the analysis of mathematically verified results of field studies contributes to increasing the reliability of conclusions, better assessment of the essence and solving of scientific-practical problems, establishing new urgent tasks for solving in the future.

Keywords: evolution, economic-mathematical methods, dispersion analysis, cereal crops, productivity, land use, climate changes, Ukraine.

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PHYTOCOENOSES UNDER DIFFERENT PHYSICAL-GEOGRAPHIC CONDITIONS: INTERZONAL, INTERHEIGHT BELTS, EXTRAZONAL ONES, ECOTONES AND PARAGENESE (LAKE BAIKAL REGION)

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ABSTRACT

This paper presents information on the vegetation of concrete environments - zonal, interzonal, interheight belts and extrazonal ones as a result of studies done by numerous vegetation researchers for different regions during many years. As this information is separate statistics in the characteristics of the vegetation cover for environmental zones and height belts, it is necessary to take it into account while characterizing the heterogeneity of vegetation structure under different physical-geographic conditions of the vast Baikal Region: this is an important aspect of such studies. Taking into account of opinions of different researchers concerning the characteristics of the structure of different territories favors the understanding of structural peculiarities of the coenoses under concrete physical-geographic conditions at a concrete territory. Stating of typological diversity of phytocoenoses as of proxies of vegetation modern state and formation trends allows to perform in a more concrete way assessments and forecasts of the development of different environments at a regional-topologic level of their spatial and temporal organization.

Key words: phytocoenoses, physical-geographic conditions, interzonal, interheigth belts, extrazonal, ecotones, paragenese, Lake Baikal region

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PHYTOCHEMICAL ANALYSIS AND GROWTH INHIBITORY EFFECTS OF SOME BOTANICALS ON SEED BORNE FUNGI OF AVOCADO PEAR (*Persea gratissima*) FRUITS IN RIVERS STATE, NIGERIA

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ABSTRACT

Phytochemical analysis and growth inhibitory effects of plant leaf extracts of *Ocimum gratisimum* and *Azadiracta indica* on seed borne fungi of Avocado Pear fruits in the rain forest ecosystem of Rivers State, was carried out. The experiment was laid out in a Completely Randomized Design (CRD) with eight treatments and three replicates. Results showed, the most frequently occurred fungus isolated from infected fruits of avocado Pear was *Fusarium pallidoroseum* (76.00%), followed by *Colletotrichum gloeosporoides* (36.00%), while *Botryodiplodia theobromae* (32.00%) was the least. Phytochemical analysis of leaf extracts of *O. gratisimum* and *A. indica* showed the presence of the following phytochemical constituents, essential oil (eugenol), flavonoid, quinones, tannins, saponins and terpenes. Significant differences ($P \leq 0.05$) existed among the various phytochemical constituents with quinones (25.0mg/g ± 0.00) having the highest quantity present in *O. gratisimum*, followed by flavonoid (15.00 mg/g ± 0.02) and tannins being the least (5.20mg/g ± 0.02). The most prevalent phytochemical constituent in *A. indica* was tarpenes (10.30mg/g ± 0.01), followed by flavonoid (10.25mg/g ± 0.01), Saponins (8.30mg/g ± 0.04) while tannins was the least (2.30mg/g ± 0.03). Radial/mycelial growth of test fungi in potato dextrose agar (PDA) amended with 20, 60, and 100% extracts of *O. gratissimum* and *A. indica* were significantly ($P \leq 0.05$) reduced when compared with control. *O. gratissimum* was most inhibitory against the test fungi compared to *A. indica*. The chemicals, Benlate (Beromyl) were also tested for their efficacy in controlling Avocado Pear rot organisms. Results showed a progressive reduction in growth of the fungi as chemical concentrations used increased particularly at 100ppm. Therefore, this research holds promise for the use of botanicals as an alternative means of synthetic fungicide. It is readily available, eco-friendly and cheaper than synthetic fungicides.

Key words: Botanical, inhibitory, fungi, Avocado Pear, Phytochemical.

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KAHRAMANMARAŞ CENTERED EARTHQUAKE PERIOD DISASTER MANAGEMENT AND SOLID WASTE PROBLEMS

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ABSTRACT

Reducing the risks before the earthquakes that occur because of the breaking of the tectonic plates on the fault lines in the earth's crust would prevent the occurrence of major disasters. As in many parts of the world, earthquakes of various sizes occur at frequent intervals in Turkey. One of the most important of these earthquakes is the two major earthquakes that occurred on the Turkey-Eastern Anatolian fault line, 9 hours apart, on February 6, 2023. caused property damage. The impact of the Kahramanmaraş earthquakes in an area of 108,812 km2 caused damage to the highways and railways to be used in the delivery of aid to the earthquake region, therefore delays were experienced in the region until the disruptions were eliminated, and the maintenance-repairs of these infrastructures were completed. For this reason, it is very important to take precautions before, during and after an earthquake and similar disasters. It has been revealed that the measures to be taken in this regard should be taken together by all the people. In this context, it is important that local governments and the public cooperate in establishing earthquake-resistant cities for disaster risk reduction activities. Public institutions and relevant departments of universities and research centers should work together. Post-disaster conflicts can generate large amounts of solid and liquid waste that threatens public health, hinders reconstruction, and affects the environment. Disaster waste can be produced because of a real disaster, or it can be produced later in the intervention and recovery stages. Disaster waste also offers opportunities: it can contain valuable materials such as concrete, steel and timber, as well as organic materials for composting. This value can be realized as a source of income or reconstruction material and reduces the burden on natural resources that might otherwise be harvested for rebuilding. During the sequence of earthquakes focused on Kahramanmaraş, the debris in the earthquake areas and many items that carry out debris removal operations and come to the region to meet the social needs of the people of the region emerge as solid waste. Since solid wastes disrupt the work and cause infectious diseases as much as their economic value, necessary precautions should be taken within the emergency action plans.

Keywords: Kahramanmaraş, Earthquake, Disaster waste, solid waste, economic

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MACHINE LEARNING METHODS FOR UNDERSTANDING BIODIVERSITY AND ITS CONSERVATION

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ABSTRACT

The exponential expansion of digital data and advances in machine learning techniques present great opportunities for biodiversity research. This paper aims to explore the application of machine learning algorithms to analyze and interpret some biodiversity data pertaining to Class Insecta, specifically focusing on Order Odonata. This study seeks to demonstrate the power of machine learning in generating valuable insights that facilitate species identification and contribute to the advancement of conservation efforts. This paper encompasses the application of various machine learning algorithms to data from Class Insecta, Order Odonata, for classification, clustering and prediction tasks, and the evaluation of their performance.

Keywords: biodiversity, machine learning methods, species identification

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TRENDS OF BLUE ECONOMY AND DIGITAL MARKETING WORLDWIDE A BIBLIOMETRIC ANALYSIS

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ABSTRACT

This paper aims to find out the level of the scientific literature worldwide regarding the blue economy and related aspects, especially blue tourism considering the development of digital marketing at a global level. The Blue Economy is crucial for the goals of developing sustainably coasts, oceans, and their resources, and important also for the European Green Deal and the UN`s vision for more inclusiveness in this sector. Aspects of circular economy, blue tourism, and fishery, as well as expenses to and income from these activities, and human resource issues regarding the field, will be researched as well. The bibliometric analysis using RStudio helps identify the leading researchers in the field, their origin, place of work, or research institution. It shows an increase in research on marketing, machine learning, international trade, information technology, tourism, etc. after 2002. The paper shows also how this increase was distributed for each of them, as well as trends, individual and institutional collaborations, etc., which would be of great interest to policymakers, stakeholders, and future researchers to find out these trends and further elaborate them in future findings.

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DETECTION OF THE CAUSAL AGENT OF TAN SPOT (*PYRENOPHORA TRITICI-REPENTIS*) USING SPORE-CATCHING DEVICES

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ABSTRACT

Drechslera tritici-repentis (*Died.*) *Shoem.* (teleomorph *Pyrenophora tritici-repentis* (Died.) Drechsler) is the causal agent of a tan spot, a major wheat disease worldwide. Wheat yield losses can reach up to 60%. Accurate and timely monitoring of harmful objects is crucial for effective crop protection against economically significant pathogens. Thus, in our study, we aim to evaluate the detection of tan spot operating spore trapping devices of various designs. As a result, the possibility of detecting tan spot pathogen spores using various spore-catching devices was shown. The number of pathogen spores caught by different devices varied from 1 pc. up to 18 pcs. depending on the design of the device, variety and sampling time. Our study demonstrates that spore traps of various designs help to detect tan spot prior to its visible manifestation at its minimum development (up to 1-5%). It's, crucial for the development of effective protective measures.

Keywords: winter wheat, tan spot, *Pyrenophora tritici-repentis,* spore-catching device, disease development, spores, monitoring.

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ASSESSMENT OF NATURAL AND ARTIFICIAL RADIOACTIVITY LEVELS IN SOME SEEDS COMMONLY USED IN ALBANIA

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ABSTRACT

All types of foodstuffs contain an amount of radioactivity which can enter into the human body by the ingestion pathway. If radionuclides are deposited in the human body and concentrations of them was increase from foodstuffs, these may cause illness and a number of health hazards. Fifteen samples of different types of seeds commonly used in Albania were collected from the local markets of the city of Tirana. For this reason, the aim of this study was focused in the measurement and analysis of the activity concentrations of natural and artificial radionuclides in the seed samples. The measurements were performed by using the High Purity Germanium (HPGe) detector and the activity concentration for radionuclides of ^{226}Ra, ^{232}Th, ^{40}K and ^{137}Cs were determined by gamma-ray spectrometry method. The range of activity concentration of natural radionuclides was found to be from 0.93 ± 0.18 to 10.34 ± 1.17 Bq kg^{-1} for ^{226}Ra, < MDA to 2.20 ± 0.24 Bq kg^{-1} for ^{232}Th and 28.35 ± 2.08 to 446.36 ± 19.04 Bq kg^{-1} for ^{40}K, respectively. The activity concentration of the artificial radionuclide of ^{137}Cs was detected only in four seed samples with highest value of 0.65 ± 0.22 Bq kg^{-1}. The average values of activity concentration for ^{226}Ra and ^{40}K were found 5.35 Bq kg^{-1} and 178.17 Bq kg^{-1}. The highest values of activity for ^{232}Th and ^{137}Cs were found 2.20 Bq kg^{-1} and 0.65 Bq kg^{-1}. The results of activity concentration of this study were compared with international reference values and the other literatures. The average values of activity concentration for seed samples were found lower than the worldwide average value, which is defined by UNSCEAR 2000 report. Therefore, the results obtained in this study for radioactivity levels show that the consumption of these seeds are safe and no harmful health effects are expected for peoples living in Albania.

Keywords: Radioactivity, Radionuclide, Gamma-ray spectrometry, Activity concentration, Seed.

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THE HIGH-EFFICIENCY CR(VI) ADSORPTION USING POPLAR WOOD BASED ACTIVATED CARBON

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ABSTRACT

Activated carbons were obtained from poplar sawdust with H_3PO_4 activation in this study. Activated carbons were produced as 2:1 (PL2-400), 3:1 (PL3-400), and 4:1 (PL4-400) by mass chemical substance/chip ratio at 400 °C carbonization temperature with an impregnation process. These activated carbons' surfaces were identified by BET, SEM-EDX, and FTIR analyses. Cr(VI) heavy metal adsorption was carried with activated carbon (PL4-400, 1345.26 m^2/g), which has the highest surface area. Adsorption was carried out at the 2-9 pH range, in the range of 0.001-0.1 g activated carbon, and at temperatures of 25, 35, and 45 °C. The Kinetics of Cr(VI) adsorption was characterized by using adsorption kinetic models. The relationship between adsorbent and adsorbed is explained by Langmuir and Freundlich isotherm models. It was observed that the Cr(VI) adsorption on PL4-400 was more compatible with the Langmuir adsorption model. In addition, $\Delta G°$, $\Delta S°$, and $\Delta H°$ values were determined by making thermodynamic calculations, and the applicability of the adsorption was identified as endothermic and spontaneous.

Keywords: Waste water, Activated carbon, Cr(VI) adsorption,