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In-Person Session

THE EUROPEAN GREEN DEAL IMPLEMENTED FOR ROMANIA BY THE NATURA 2000 NETWORK

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The Council of the European Union welcomed the objective to create a coherent network of well-managed protected areas and to protect at least 30% of the EU's land area and 30% of the EU's maritime area. The Council underlines that this is a goal that Member States must achieve collectively, with all Member States participating in this joint effort, as well as taking into account national conditions. This network should be based on the Natura 2000 network and supplemented with additional designations by Member States.
The European Green Deal - The European Commission (EC) has committed to presenting a proposal for legally binding EU nature restoration targets for restoring degraded ecosystems.
In June 2022, the EC submitted a proposal for a regulation on the restoration of nature. The proposal sets more restoration targets and obligations for a wide range of ecosystems, from forests and farmland to urban areas, rivers and marine habitats, complementing existing legislation.
At the same time, the United Nations Framework Convention on Climate Change supports sustainable development objectives, including in point 15: the protection, restoration and promotion of the sustainable use of terrestrial ecosystems, the sustainable management of forests, combating desertification and stopping irreversible land degradation, as well as halting the loss of biodiversity.

Romania is ready to implement the EU Biodiversity Strategy for 2030 in correlation with the European Green Deal, based on the matrix through which the general assessment of the conservation status for species and habitats in the Natura 2000 network was carried out.

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- Project RO1567-IBB04/2024 "Evaluation of the conservation status of species and habitats in Romania".
- The POIM project: "Completing the level of knowledge of biodiversity by implementing the system for monitoring the state of conservation of species and habitats of community interest in Romania and reporting based on Article 17 of the Habitats Directive 92/43/CEE" (cod SMIS 2014+ 120009): 2019-2023.

INFLUENCE OF DOLOMITE AND NP DOSAGE ON SOME MORPHOLOGICAL CHARACTERS OF WHEAT

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Abstract. Being necessary both for a normal plant physiology and for the improvement of acid soil properties, calcium (Ca^{2+}) applied alone and together with magnesium (Mg^{2+}) is permanently required in agricultural crops. Recent research has shown some positive effects of the two chemical elements in the case of the winter wheat crop. Thus, as an effect of dolomite, the height of the plants increased by 6-7 cm, and the straw thickened by 0.3 mm. The spike was 0.5 cm longer, formed 0.7 extra spikelets and was 0.1 g heavier. The spikelet membranes (glume, palea) fluctuated less in length, and the awns elongated slightly. In one spike, 0.3 extra grains were formed and weighed approx. 0.1 g. TGW experienced modest reductions against the backdrop of chemical fertilizers. The most favorable correlations were obtained between the morphological characters of the Ursita variety fertilized only with dolomite. The obtained results recommend the application of the amendment to the white luvic soil existing in the South and to the winter wheat crop.
Key words: dolomite, ears, grains, wheat, Ursita variety

NATURAL RESOURCE MANAGEMENT INVOLVING TECHNOLOGICAL APPROACH (ARTIFICIAL INTELLIGENCE) TO SEQUESTER CARBON, LIMIT GLOBAL WARMING TO WELL BELOW 2°C AND ACHIEVING LAND DEGRADATION NEUTRALITY IN MOLDOVA

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Introduction

Because Republic of Moldova is facing a major risk of the ecological state: super intensive use of agricultural landscapes, the aim of this research was to develop an automated mechanism for collecting, documenting and systematizing information on Land Degradation Neutrality involving AI.

Materials and Methods

The pilot area of the project covered 88528 ha (32 localities). Using ArcGis, CORINE2000, Sentinel2, Copernicus, and NDVI, soil sampling was performed at IPASP "Nicolae Dimo".

Results and Discussion

The research/analysis results revealed:

1. The "Land Use/Land Cover Data Collection Methodology", an innovative approach using geostatistical modeling combined with satellite imagery, has been developed.
2. The concept for "Methodology of data collection for the potential indicator of land productivity and soil carbon stocks" was developed, this reducing the expenses by ≈50%, along with a 90% accuracy prompt evaluation.

Conclusion

1. The scientific approach enables the information automation in an efficient, fast, and cost-effective way for land degradation neutrality.
2. The methodologies developed:

- provide time-efficiency: minimal expense to identify the best areas for a given crop based on multifactor analysis.
- increase the operational capacities of decision-making, planning, evaluation, monitoring and control for central/local public authorities and agricultural producers, while the expenses decrease up to 50%.

INTERCONNECTIONS AMONG PLANTS, SOIL INVERTEBRATES, ENVIRONMENTAL VARIABLES AND MANAGEMENT IN GRASSLANDS FROM S-W FĂGĂRAȘ MASSIF (ROMANIAN CARPATHIANS)

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The grasslands from Făgăraș Massif have been used from centuries as pastures for sheep grazing. Focused on two pastures with different grazing impact intensity, our study comprises inventory of plant species, environmental factors, for air and soil, invertebrates from soil on 10 quadrats on 10 transects for each pasture (totally 200 quadrats), creating a database.

The statistical analysis of the database highlighted that the *Violo declinatae-Nardetum* Simon 1966 dominates the vegetation in both grasslands. Plants and invertebrates' diversity are positively correlated and modify local environmental conditions. The variability in space and time of the functional and structural parameters of plant species and invertebrates' population is determined by chemical and physical factors. These factors are responsible for the ecological role of plants and soil invertebrates and the functioning of the ecosystems.

The natural and anthropogenic grasslands from alpine and subalpine zones of Făgăraș Massif, used as pasture for sheep grazing, are poor or medium quality, accordingly with the management practices applied by local managers.

Acknowledgments

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INVESTIGATION OF THE DEGREE OF RELATEDNESS OF HEMP (CANNABIS SATIVA L.) GENOTYPES IN TERMS OF SOME MORPHOLOGICAL CHARACTERS

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Hemp is a plant that can be utilized in various industrial sectors, including food, textiles, construction materials, biodegradable products, pharmaceuticals, and cosmetics, with each part from root to seed offering different potential applications. The study was conducted over five generations from September 2017 to September 2020 in the greenhouses of the Faculty of Agriculture at Ondokuz Mayıs University, involving 46 hemp genotypes, 43 of which were of local (Turkish) origin and 3 from Germany and France. In classical breeding methods, improvement of a specific trait is typically followed by the improvement of another trait sequentially. While grouping is easier and more interpretable in univariate analyses, clustering in multivariate analyses is complex and relatively harder to interpret. Cluster analysis allows for the simultaneous evaluation of multiple traits, thus enabling consideration of epistatic effects. In this study, using measurements according to UPOV criteria, including male-to-female plant ratio, plant height, leaf number, stem diameter, technical stem length, flowering date in male and female plants, and thousand seed weight, cluster analysis was employed to classify hemp genotypes and investigate the suitability of cluster analysis in breeding. The results indicate that cluster analysis applied to single-year data is not suitable for breeding purposes.

POMOLOGICAL PARAMETERS OF RED FLESHED APPLE (*M. niedzwetzkyana* Dieck.*)* IN CENTRAL ANATOLIA

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Abstract: Apple is the most produced temperate climate fruit in the world. There are around 30 species in the apple and it has a very wide diversity. Four different gene centers for apple have been identified in the world. These are East Asia, Central Asia, West Asia-Europe and North America gene centers. Among these centers, Central Asia has a unique richness with its unique species. *Malus niedzwetzkyana* Dieck, one of the species unique to this region. It attracts attention with its different morphological structure. There are pink-purple pigmentations on leaves, flowers and fruits. One of its most important features is that the fruit flesh is red in color. *M. niedzwetzkyana* has also been declared an endangered species and red listed. In this study, fruit characteristics of some genotypes of this species were revealed in Kayseri, Türkiye conditions. Fruit weights in the genotypes were found to be between 68.1-85.6 g. Fruit width and length values varied between 54.3-60.9 and 47.7-51.9 mm, respectively. The amount of total soluble solids was determined as 13-14.8%. Fruit skin color L* value was revealed as 40.6-46.3, Hue angle as 28.9-30.3, Chroma value as 16.4-21.2. The results obtained were found to be important for the protection and evaluation of this species.

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FRUIT AND TREE CHARACTERISTICS OF WILD PEAR (*Pyrus elaeagrifolia* Pall.) COLLECTED FROM ISPARTA PROVINCE

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Wild Pear (*Pyrus elaeagrifolia* Pall.) is among the pear species that have found a wide distribution area in the region starting from Southeastern Europe to Anatolia, the Caucasus and Crimea, and have adapted very well to arid and unfavorable conditions. The most important feature of the species is its tolerance to many biotic and abiotic conditions. On the other hand, the rootstock potential in pear production is high. Since it is a species that reproduces by seeds in nature, it has a wide range of diversity. In this study, fruit some fruit and tree characteristics of different wild pear genotypes collected from Isparta province of Türkiye were determined. Accordingly, a wide variation was identified in terms of the examined characteristics. Fruit weight among the genotypes varied between 6.72-33.74 g, and genotype 16 had the largest fruits. Fruit lengths were found to be between 19.87-32.21 mm, and fruit widths were found to be between 23.39-41.56 mm. Fruit pedicel lengths varied between 13.82-27.73 mm. In the genotypes examined, the fruit shape was determined as round or flat-round. The tree form has changed from upright, upright to spreading and spreading. Leaf color in the genotypes was determined as blue-grey or green-grey. The results obtained show that there is wide variation in fruit and tree characteristics among wild pears in nature. It is important to preserve this richness and use it in breeding studies.

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PROTEIN PROFILE OF MAIZE (ZEA MAYS L.) UPON APPLICATION OF NATIVE BACILLUS SPECIES

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Species belonging to Bacillus genus forms symbiotic associations with plants and act as bioagents to improve the yield. Although they can promote growth by inducing metabolic processes, their effects on the protein expression profile in maize (*Zea mays* L.) have not been fully clarified. The present study aimed to evaluate the protein expression profile in maize after seed treatment with novel strains of Bacillus species individually or in combination. Bacillus isolates carrying ACC deaminase, phosphatase and siderophore genes were identified by MALDI-TOF analysis and 16S rDNA sequence comparison. The proteins were extracted using TCA/acetone method from the fresh young leaves below the topmost leaves of 36 days old maize seedlings and analysed utilizing SDS-PAGE and 2D gel electrophoresis.
In Bacillus sp. KH16.2, Bacillus thuringiensis SY49.1, and Bacillus sp. KH6.4 treated seeds, distinct differences in protein spots were observed as compared with the control. Also, common spots were obvious among the treated and control gels with distinct intensities. Clarifying the contributions of these strains on the growth of maize plant at the proteomic level may lead to a deeper understanding of the biochemical mechanisms of action. Treating maize seeds with these bacterial strains resulted in changes in protein expression levels and improvement in morphology and hence promoted growth and yield positively.

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ADMIRATION, WELL-BEING, AND INTERPERSONAL BEHAVIOR

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Admiration, experiencing and expressing admiration towards another, may be considered a basis for building harmonious relationships, but its impact on a more personal level has been less studied. Is admiration toward another opposed to self-acceptance or a loss of personal power, or is it associated with benefits for personal wellbeing as well? The objective of the present study was to explore the answer to this question be means of an experiment, integrating psychometric and statistical methods as well, in a more detailed manner. The experimental task was a group exercise during which the participants expressed by painting the way four persons in their life make them feel and think, and the way they have inspired them, and the same about a fifth person in the room. Afterwards, they presented and spoke about them in front of the whole group, without naming the persons. The persons in the control group only completed the same questionnaires. The participants in the experimental task showed significantly higher scores on autonomy thwarting (offered) and relational thwarting (offered), and lower on relational support (offered) and purpose in life. For all participants, the relational and autonomy support they offer was associated with personal growth.

THE EFFECT OF MASSAGE THERAPY ON THE SLEEP QUALITY IN HEALTHY ADULTS

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Introduction

Improving sleep quality is in relation with better physical and mental health, better mood, and quality of life. Impairment in sleep quality is characterized by the symptoms such as spending too much time for transition to sleep, shortening sleep duration, unrest during the night, continuous movement during sleep, and waking up without feeling rested. Low sleep quality causes fatigue, deterioration in concentration, learning disability, nervousness, increased sensitivity to pain, hallucinations, slowing of growth, weakening of the immune system, susceptibility to infections, delay in wound healing, decrease in quality of life, and increased risk of mortality and morbidity. Short sleep was significantly associated with the mortality outcome. Similar significant results were observed in diabetes mellitus, hypertension, cardiovascular diseases, coronary heart diseases, and obesity. Increasing evidence also points to a bidirectional relationship between sleep and health; that is, sleep disturbances contribute to the development of or increase the severity of various medical and psychiatric disorders, and these same disorders result in poor sleep quality. Based on these findings, Itani et al. (2017) declare necessity of future studies for examining the effectiveness of psychosocial interventions to improve sleep on reducing these health outcomes in general community settings. One of the non-pharmacological interventions proposed to improve sleep quality and facilitate sleep is applying the massage. Massage is a systematic touch to the body to reduce tension, provide relaxation, and stimulate and accelerate blood circulation. Massage decreases fatigue, exhaustion, tension, and pain by showing a sedative effect and improves the feeling of trust in individuals. Studies indicated that massage relieves pain and fatigue, reduces blood pressure, decreases heart rate, decreases cortisol release and depression, and regulates

sleep. Therefore, massage is a method that is frequently used to overcome sleep problems.

Materials and methods

An online self-report questionnaire was administered to clients of four massage therapists with more than 10 years of practice and to first-year students at the National Sports Academy, Sofia, Bulgaria, after practicing back and low back massage under the supervision of their instructor. The questionnaire contains 4 sections collecting personal information and information about massage parameters, sleep quality on non-massage days and sleep quality on the night following massage session. 74 healthy volunteers completed the questionnaire.

Results

74 healthy volunteers completed the questionnaire. We excluded 2 participants younger than 18 years old. Statistic analysis showed a significant improved of quality of sleep based on the studied sleep parameters: time for transition to sleep (with - 6,16 min), sleep duration (with 39 min), need for more sleep (increasing “no” answers from 25 to 46 after massage) and self-reported sleep rate (with 1,42). We also find correlation between massage duration and falling asleep during massage and the time for transition to sleep, sleep duration, and sleep rate with better results for 60- and 90-min massage duration and drifting off during massage.

CONCLUSIONS

Massage is a useful non-pharmacological method for improving the quality of sleep the night after especially 60- and 90-min massage duration and drifting off during massage. More studies are needed to evaluate the delayed effects of massage therapy on sleep parameters and quality of sleep as well as to establish the neurophysiological and biochemical mechanisms of this effects.

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RESEARCH ON FRUITING POTENTIAL OF THREE *PLEUROTUS* SPP. STRAINS

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Pleurotus mushrooms are widely recognized and intensively cultivated for their nutritional and medicinal qualities in addition to their adaptability to a wide range of culture substrates. Many biologically active compounds produced by this macromycetes have been found to be important in disease prevention and treatment. Polyphenols, tocopherols, triterpenes and structural polysaccharides such as glucans are important biocompounds with a broad spectrum of health effects involving immunomodulation, cancer prevention, antioxidant, hypocholesterolemic and antibacterial properties. The purpose of the present research was to investigate the fruiting potential of three *Pleurotus* spp. strains that were propagated through multiple biotechnological approaches and cultivated on both culture media and substrates produced with agro-industrial biomasses. The technological variants for obtaining the spawn followed this general scheme: solid inoculum on granular support - solid spawn (SISS); liquid inoculum on granular support – solid spawn (LISS), liquid inoculum - liquid spawn (LS). Organic materials such as white and red grape marc, brewery by-product, corn cobs, coffee grounds and fruits residues have been explored.

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NATURE-BASED SOLUTIONS – A METHOD TO MITIGATE CLIMATE CHANGE

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Climate change is a priority of scientific, political and public discussions today. Climate change, along with urbanization, urgently needs management methods to improve the quality of life in our cities. Cities are dynamic and vital parts of society and the main drivers of social, economic and technological development. Cities are home to more than half of the global population, but they are responsible for more than 70% of CO2 emissions. The human population continues to grow at an astonishing rate. Because climate change is so obvious, people must adapt to it because otherwise it can pose severe risks to their health and well-being. Nature-based solutions (NbS) can be a good adaptation strategy. They are actions in which people work with nature, being part of it. Nature-based solutions are an important tool in addressing the current challenges facing humanity, such as climate change, biodiversity loss and food security. The role of nature-based solutions in addressing climate change has attracted the attention of stakeholders. Adequate management measures are also needed to create social and economic benefits and achieve sustainable use of natural resources, maximizing ecosystem services.

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PERFECTIONISM, PSYCHOLOGICAL WELLBEING AND ACADEMIC PERFORMANCE IN UNIVERSITY STUDENTS

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Studies show that perfectionism is associated with academic performance, because people with a high level of perfectionism study more, they are rather intrinsically motivated and have higher performance standards. However, certain dimensions of perfectionism and an excessively high level of this trait are associated with low well-being, emotional exhaustion and frustration when the results are not the desired ones. This study aimed to assess the relationship between perfectionism, wellbeing and academic performance in students. Perfectionism was assessed using a shortened version of the Frost et al. Multidimensional Perfectionism Scale (F-MPS-Brief) (Burgess, Frost, & DiBartolo, 2016) and a shortened version of the Psychological Wellbeing Scale (Ryff & Keyes, 1995) were used to identify students' level of wellbeing. Students reported their academic performance in their last semester of study. Participants in this study included 362 Romanian students from different academic majors in Bachelor and Master's degrees. The results revealed significant correlations between dimensions of perfectionism, wellbeing and academic performances. Our findings extend the current understanding of the relationship between students' perfectionism, wellbeing and academic performance.

A PRELIMINARY STUDY ON THE ASSOCIATION BETWEEN ABO BLOOD TYPE AND TEMPERAMENTAL TRAITS

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Human personality has a certain biological basis. Hippocrates was among the first to promote the idea, asserting that temperament is determined by a peculiar combination of four bodily humors. In 1901 the Austrian scientist Karl Landsteiner discovered the ABO blood system, and during the years researchers like Takeji Furukawa (1927), Raymond Cattell (1964), Masahiko Nomi (1971) and Hans J. Eysenck (1977) have tried to link the four blood types with personality traits. This was also the aim of our study. We have used a sample of 83 people to examine possible psychological difference between the ABO blood types. The tests we have used were *The Cognitive Style Indicator*, *The Eysenck Personality Inventory*, *The Wiersma-Heymans Temperament Test* and *The Zuckerman-Kuhlman Personality Questionnaire*. We have measured temperamental traits such as extraversion, neuroticism, impulsivity, hostility, sensation-seeking and primary versus secondary psychological functioning, but also the cognitive styles of a person. Based on the results we can draw a row profile of each blood type. Thus, the O blood type appears as a primary type, balanced, sociable and with low neuroticism. The A blood type appears as a secondary type, with low extraversion and high anxiety. The B blood type appears as extroverted and impulsive, but the general profile is different for males (high sociability) compared to females (high emotionality). The AB blood type appears as primary, with a high need for activity, with the highest tendency for planning activities and the higher score on innovative style; their neuroticism is low, whereas emotivity shows a different pattern depending on gender (with only AB females scoring high on this trait). Although, due to small sample size, only a few differences reached statistical significance, a look at the group means and the effect size coefficients support the idea that temperamental traits have a biological foundation.

INFECTIONS CAUSED BY PARASITES AND VIRUSES DETECTED IN NON-NATIVE FISH SPECIES IN THE LEVANTINE SEA (A REVIEW)

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Viral and parasitic diseases are all too frequently transmitted along with introduced aquatic species. This aspect represents one of the most severe threats that an introduced species may pose to a native community. The Levantine Sea is regarded as the world's most invaded marine ecoregion. Due to various human uses and the destruction of ecosystems, the number of non native biological organisms in this region is increasing day by day. A number of problems have arisen in this region as a result of non native; the effects of introductions are not limited to biological and ecological effects, but may also have socioeconomic implications. Viral and parasitic diseases of non native fish species have rarely been investigated and there is limited information about it in introduced habitats. In this study, information on Viral and parasitic diseases detected in non-native fish species of the Levantine Sea will be presented and the effects of diseases will be indicated.

OVERCOMING CHALLENGES IN ANCIENT DNA RESEARCH

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Ancient DNA (aDNA) studies have revolutionized biology, anthropology, archaeology, and environmental sciences ever since the first ancient DNA sample was sequenced from an extinct zebra species four decades ago. Data produced by these studies have greatly advanced our understanding of the genetic history of not just humans, but also other organisms. Despite significant advancements, aDNA studies still face major challenges such as the degraded nature of aDNA and contamination. In this work, we overview the challenges that are inherent to aDNA studies and focus on various ways that have been used to overcome these challenges. We emphasize the importance of implementing preventive measures for contamination during sample collection in both the field and laboratory, as this is crucial for successful aDNA studies. We also provide a brief overview of the refined lab protocols implemented to improve aDNA extraction yield, new techniques developed to detect and prevent contamination in aDNA, and advancements in sequencing technology and data analysis.

LUTEOLIN ENHANCES ANTICANCER EFFECTS OF PX-478 DURING HYPOXIC RESPONSE IN METASTATIC BREAST CANCER CELLS

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Breast cancer comprises 15 % of all cancer-caused deaths among females, and every year two million new cases are reported worldwide. The presence of severe hypoxic stress can drive tumor formation through angiogenesis and altered metabolic pathways. Targeting HIF1α is a promising strategy as the increased activity of HIF is considering as the consequence of aggressive phenotype in tumors. PX-478 is an inhibitor of HIF-1 that suppresses transcriptional activation of HIF-1. Flavonoids are bioactive secondary metabolites that exert antioxidants, anti-inflammatory, immunomodulatory and anticancer activities. Even though anti-hypoxic effects of several flavonoids, including Luteolin, quercetin, hesperidin, epigallocatechin gallate, genistein and naringenin were studied in both in vivo and in vitro models, effects of flavonoids in combination with a drug on hypoxic response in breast carcinoma cells is unknown. In this study, we tested anti-hypoxic effect of Luteolin, which is intensely researched flavonoid for anticancer effects, in pair with PX-478 in breast cancer cells. Here we first investigated cytotoxicity of some flavonoids both single and in pair with PX-478 in several breast cancer cell lines. Then we tested HIF-1α level in breast cancer cells at time dependent manner. Finally, we examined effect of Luteolin PX-478 combination on some metastatic characteristic of breast cancer response to hypoxic stress. We found out that Luteolin clearly enhances PX-478 anti-cancer effects in breast carcinoma cells.

MOLECULAR MARKER BASED COMPARISON OF DROUGHT TOLERANT AND SENSITIVE TURKISH SUNFLOWER (*HELIANTHUS ANNUS* L.) CULTIVARS

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Helianthus annuus L. is the second most notable oilseed crop all around the world, after soybean, and comes from temperate North America. Sunflowers use for not only human consumption it uses also for many purposes. Morphological, geographical, molecular, and archaeological data indicate that sunflowers used as food, medicine, body painting in rituals, bioenergy and dye. Sunflower is a self-fertilize plant and it needs to pollen activity and honey bee for fertilization. There are some objectives in terms of sunflower breeding. These are drought resistance, resistance to disease and pets, breeding for self-fertile lines and branching shape. The pioneering sunflower breeding study was belonged to develop varieties with increased oil content. This was followed by the development of cytoplasmic male sterility (CMS) and haploid induction methods. In order to produce new cultivars with classical breeding methods is time consuming. To reduce this period uses double haploid technology and molecular marker-based technology. Molecular markers have been employed in a wide range of fields, including genetic mapping, paternity testing, identification of mutant genes related to hereditary diseases, cultivar identification, marker-assisted crop breeding, population history, epidemiology, food safety, and population studies. Among these, the start codon targeted (SCoT) marker has gained popularity for its ability to target a specific region around the ATG start codon, which is conserved across all plant species. SCoT markers are considered useful tools for studying genetic diversity in various plant species due to their simplicity, cost-effectiveness, high polymorphism, reproducibility, and time-saving attributes. Drought is defined as geographic location, amount, and time of precipitation. Also, it is defined as a shortage of water availability sufficient to cause a loss in yield or a period of no rainfall or irrigation that results in insufficient soil moisture leading to reduced crop growth and yield. Sunflower is one of the plants that needs a high amount of water during the development period. Studies of sunflower

mainly focuses on drought response. This study aims to compare drought tolerant and sensitive Turkish cultivars using the SCoT marker system to find a linked DNA region that could be responsible for the tolerance. This research conducted with five common sunflower (Helianthus annus L.) genotypes that from three of them was drought tolerant, two of them was drought sensitive genotypes. The DNA of each sample was isolated from fresh leaves using the DNeasy Plant Mini Kit. Altogether 25 primers were tested and 13 SCoT primers gave enough polymorphism and PCR amplification was performed in a 2720 thermocycler. DNA bands were visualized by UV illumination using a gel document system (Bio-Rad). The approximate fragment size was compared with the GeneRuler™ 1 kb DNA ladder (Thermo Fisher Scientific). Banding profiles generated by SCoT primers were compiled into a data binary matrix based on the presence or absence of the selected band. The dendrogram and principal component analysis (PCA) were conducted using Past 4.04 software. Altogether 25 primers were tested and 13 SCoT primers successfully amplified 3 droughts tolerant and 2 drought sensitive genotypes of Helianthus annus L. and 13 SCoT primers gave 100% amplification with polymorphism. The total number of bands from 13 SCoT primers was 161, with 125 bands showing polymorphism and the average percentage of polymorphic bands was 76.79%. The size range of bands was from 250-8000 bp. The total number of bands range from 4 to 27 an average of 12.38 bands, while the number of polymorphic bands varied from 2 to 21 an average of 9.61 bands per primer. Based on the similarity and difference matrices highest value was belonged to drought tolerant cultivar with name 8129R. On the other hand, drought sensitive genotypes 9718A and 97251A have shown closely related values. The PCA result supports the results of similarity and distance matrices, which shows that 9718A and 97251A are closely related. In conclusion, the SCoT marker can be used as an effective molecular marker in case of sunflower genetic diversity analysis. Especially, drought tolerant cultivars TUNCA and P64LL62 showed similar characteristics in terms of genetical background of drought tolerant.

BACILLUS THURINGIENSIS STRAINS AS PLANT GROWTH PROMOTORS AND BIOFUNGISIDES

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Bacillus thuringiensis (*Bt*) species are gram-positive and one of the most important bacterial groups characterized by producing insecticidal inclusion bodies during sporulation stage. In this respect, *Bt* species, strains and isolates are the most effective species-specific bioagents used as bioinsecticides worldwide. Apart from these features, *Bt* strains also have the ability to produce/secrete effective chemicals as protein and secondary metabolites encoded in their genes, which have the potential to exhibit fungicidal and PGPR properties. Chitinase is one of the main fungicidal proteins produced by *Bt* strains. Additionally, fengycin, iturin, zwittermycin and surfactin are among their secondary metabolites with lipopeptides properties with the potential to be used as active fungicidal ingredients. *Bt* strains directly contribute to plant growth with the metabolites such as abscisic acid (ABA), indole acetic acid (IAA), jasmonic acid (JA) and phytase, as well as 1-aminocyclopropane-1-carboxylate deaminase, Mn-dependent inorganic pyrophosphatase, phosphatases, and siderophore proteins among the metabolites showing PGPR effects. By using *Bt* strains carrying one or more of these features in the same formulation, biopreparations with bioinsecticide, biofungicide and biostimulant properties can be prepared and eco-friendly solutions can be put forward to reduce the use of chemical insecticides, fungicides and inorganic fertilizers while also increasing the yield.

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BIOSTIMULANTS WITH AMINOACIDS USED FOR IMPROVING SEED GERMINATION AND SEED VIGOR INDEX IN EGGPLANT

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Eggplant seed production is an important activity in breeding and cultivars maintaining of this species. Our research paper presents the influence of foliar treatments with biostimulants with amoniacids applied during the vegetation period, on the dynamics of seed germination, the percentage of germinated seeds and seed vigor index at eggplant. Biological material consist of two Romanian eggplant cultivars, Luiza and Belona. Four treatments were carried out, at 14 days interval, starting from the fruit setting. The following products were used for the treatments: Florone, Florabax and Rerum. After the fruit harvesting at physiological maturity, the seeds were extracted and used for assessing the germination dynamics in the laboratory. The seeds were placed on Petri dishes at 20^{O}C for 16 hours and 30^{O}C for 8 hours. After 14 days, germinated seeds were analysed for evaluation of sprouts, to calculate seed vigor index. Our results concluded that foliar treatments applicated in vegetation period with Florabax and Rerum can improve the seed germination process and have a positive influence on the percentage of germinated seeds and seed vigor index at eggplant.

Acknowledgments
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HOW CAN NANOMATERIALS AND NANOTECHNOLOGY ADVANCEMENTS CAN FIND APPLICATOINS IN OUR VERYDAY LIFE

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In many cases, nanotechnology and nanomaterials are received with reticence by the general public. This can be explained by the concerns regarding their potential health and environmental impacts, equity issues (e.g., access to nanotechnology-enhanced products), the lack of understanding regarding what nanotechnology is and how it works. In the same time, a negative or sensationalized media coverage can influence public perceptions of nanotechnology, emphasizing potential risks or portraying it as a futuristic technology with unpredictable consequences and the past technological failures can contribute to this attitude. However, the correct and scientifically-supported application of nanotechnology can lead to the increase in quality of our daily life. The present works describes the advances of our group in the nanotechnology area, presenting the application of nanomaterials in different areas, such as the development of scaled-up technologies for environmental protection or the proposal of health materials (such as, nanomaterials-based

dental restoration cements). The potential of the proposed nanomaterials fur further industrial use are also addressed.

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NANOTECHNOLOGICAL APPROACH FOR THE PROTECTION OF CULTURAL HERITAGE

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Heritage science represents a research field too often found in a complex and dialectical relation with the continuous development of new technologies. In many cases, the development and proposal of new materials can, if not sufficiently supported by the results of restorers and conservators, a real “deadweight” and not a step forward. In this context, we have proposed and substantiated the application of new recipes based on nanomaterials for conservation of inorganic materials with cultural value. By incorporating the knowledge of materials science specialists with the needs of practitioners in the area of cultural heritage science protection, we were able to propose recipes with practical applications, that could preserve the material heritage inheritance for future generations. The use of organic/inorganic composites allowed not only the reinforcement of the inorganic elements of vernacular constructions (enhancing their mechanical properties), but also their protection from another serious hazard for their state of preservation (the microbial attack).

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COLORIMETRIC DETECTION OF *STAPHYLOCOCCUS AUREUS* USING METALLIC NANOPARTICLES

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Staphylococcus aureus was detected using colorimetric detection based on Paper analytical device (PADs) and UV-Vis spectroscopy. Various cruciferous plants have been tested for their ability to perform phytosynthesis of gold nanoparticles. The hydroalcoholic extracts were made using two extraction methods: temperature and microwave. To synthesize gold nanoparticles (AuNP) by phytosynthesis, each extract was incorporated with prepared 1 mM aqueous solutions of $HAuCl_4$ in an Erlenmeyer flask. The mixture was then left to incubate at room temperature for a duration of 30 minutes. The results indicate that PADs exhibit a colour change, changing from white to a yellow shade upon the addition of AuNP. The presence of bacteria, such as *S. aureus*, causes the colour of AuNP-PAD to diminish. The blue channel exhibited the greatest change in mean colour intensity variation among the RGB channels when comparing the absence and presence of bacteria. This channel was subsequently examined in experiments involving the detection of microorganisms. The validity of these tests was verified by UV-Vis spectroscopy.

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EVALUATION OF SOME FUNCTIONAL PARAMETERS AS DIAGNOSIS AND PROGNOSIS IN SARS-COV 2 INFECTION

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The clinical implications of different blood indices in patients infected with coronavirus were analyzed in different stages of infection and post-infection. The patients included in the study presented themselves at the Pneumophthisiology Hospital "Sfantul Andrei" between January 1 and December 31, 2023. We performed statistical studies regarding the variation of functional hematological (RBC, WBC, PLT) and biochemical parameters (glucose, cholesterol, PCR, dimers, creatinine, triglycerides, sideremia) in infected patients, the first days of the disease as well as in post-covid patients after 3 weeks from healing. By monitoring these parameters, we aim to identify potentially severe cases in order to establish strategies to reduce the mortality associated with this infection.

IMPACT OF RELATED TO HALLUX VALGUS PAIN SENSATION ON THE QUALITY OF LIFE

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Hallux valgus (HV) is one of the most common chronic deformations, affecting approximately 12–70% of general population and 30–58% of women. HV is recognised as a major public health problem with escalating trajectories; given the high incidence related to orthopaedic foot surgery, its association may pose notable health problems in women, such as osteoarthritis, disability, greater risk of falling, impaired balance and gait patterns, toe muscle weakness, worse physical performance, lesser quality of daily life and many others. Pain is not only a highly noxious experience per se, but it can also have an overwhelmingly negative effect on nearly every other aspect of life, including mood and capacity to function in daily roles.
The purpose of this study is to estimate the impact of related to hallux valgus deformity pain on the quality of life in untreated subjects. A self-reported questionnaire was distributed through podiatrists, orthopedists and kinesitherapists to 65 patients, suffering from hallux valgus deformity. Questionnaire includes 3 sections: (1) personal information, pain localisation and pain intensity; (2) Manchester Foot Pain and Disability Index (MFPDI); (3) EuroQol- 5 Dimension (EQ-5D-5L). We studied 65 subjects (62 women and 3 men) with a mean age of 46.87 years. Pain intensity, as measured by a visual analog scale (VAS), varies widely from no pain “0” to the maximum pain a person can tolerate “10”. However, most of the subjects felt mild to moderate pain. The maximum average degree of pain is correlated with the pain presented below the ball of the hallux, the local pain of the deformity (over 4.29) in relation to the absence of pain in the region of the first metatarsophalangeal joint (under 3). It feels more painful when combined with pain under the balls of all the other toes and/or under the fifth toe. Feeling pain

under the ball of the hallux with or without pain under the balls of the other toes (metatarsalgia) was associated with significantly higher scores on the Functionality, Personal Appearance, and Pain subscales of the MFPDI, but not on the Work/Leisure subscale. However, the values are below 50% of the MFPDI subscales range.
Detailed analysis of separate responses from MFPDI shows markedly impairment of avoiding of standing for a long time, feeling of self-conscious about the feet and the shoes, having constant pain in the feet which is worsening in the evening, and more pain and discomfort during everyday activities. The intensity and localization of pain in hallux valgus deformity worsens some aspects of the quality of life, mainly related to the avoidance of activities that require prolonged standing and the concern about the feet and the shoes that must be worn. Some of the results were not statistically significant due to the relatively small number of cases in the groups. Therefore, conducting an analysis on a larger number of subjects and development of pain management strategies are necessary.

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WEED CONTROL IN TOMATO CROPS IN THE FIELD

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The experiment was established at R.D.I.V.F.G. Vidra in 2023 and aimed the weeds control in tomato crops in the field. The tomato variety Pontica 102 was used. The herbicides Buzzin, in doses of 0.5 kg/ha, Stomp Aqua, 1.0-3.0 l/ha, Wish Top, 0.83-1.25 l/ha and Titus 25 DF, 40-60 g/ha were tested. The experiment included 5 variants, in 2 replicates. The surface of the repetition plot was 36 square meters. The presence of the following weed species was identified in the culture: *Setaria* spp. (bristle grasses), *Portulaca oleracea* (fat grass), *Amaranthus* spp. (amaranth), *Convolvulus arvensis* (field bindweed), *Abutilon theophrasti* (velvetleaf) and *Cerastium arvense* (field chickweed). The herbicide Titus 25 DF effectively combated the weed species *Setaria* spp. (E=99.4%), *Portulaca oleracea* (E=66.7%; average E=83.1%) and Buzzin, the weed species *Portulaca oleracea* (E =89%) and *Setaria* spp. (E=68.4%; average E=78.7%). Regarding the yields obtained, variants 2 (Stomp Aqua) with 5.740 kg/m^2 and 1 (Buzzin) with 5.650 kg/m^2 were in the first 2 places, compared to 4.050 kg/m^2 for variant 5 (untreated control).

ASSESSING BEETLE DIVERSITY IN STEPPE ECOSYSTEMS OF THE REPUBLIC OF MOLDOVA

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The steppe is one of the most transformed ecosystems, yet it remains underrepresented in the network of protected areas. Simultaneously, challenges such as global climate change, pollution, overgrazing, soil depletion, and the decline in humus levels exacerbate its vulnerability. A thorough investigation into the diversity of beetles in steppe regions can shed light on the biodiversity richness and provide critical data for restoration and conservation efforts. The study was conducted from May to October 2023 in five locations across the northern (Taul, Draganesti, and Napadeni) and southern (Chirsova, Opaci) regions of the Republic of Moldova. Beetles were collected using Malaise traps, and a total of 19 beetle families were identified. Particularly, the most abundant were found within the families Coccinellidae, Chrysomelidae, Mordellidae, Oedemeridae, Tenebrionidae, and Cantharidae. The outcomes of a comprehensive study of beetle diversity in the steppes of the Republic of Moldova will underscore the critical need for enhanced conservation efforts to protect these valuable ecosystems from ongoing environmental threats and degradation.

QUALITY OF GOJI BERRY FRUIT GROWN IN MARACINENI

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Goji fruits from the Lycium barbarum L. and L. chinense Mill. plants, belonging to the Solanaceae family, have a long history of being utilized as both food and medicine in Asian nations for centuries and are presently enjoyed worldwide. Wolfberry fruit, also known as Lycium barbarum L.. The quality of herbal remedies is essential for ensuring their safe consumption and has been demonstrated to be influenced by supply chains. Lycium barbarum has a history of use in traditional Chinese medicine for nourishing the liver and kidneys, as well as improving vision. Its fruits are either dried or freshly squeezed to extract juice, which is then concentrated for beverages. However, the quality and functional component content of these fruits vary noticeably depending on the geographic region in which they are grown.
In this study, we analyzed the plant productivity and fruit quality of various goji fruit samples obtained from 22 genotypes in Mărăcineni, Argeş.

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THE BEHAVIOR OF SOME CORN HYBRIDS IN THE CONDITIONS OF ALBIC LUVOSOL FROM SCDA PITEȘTI-ALBOTA IN 2023

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Climate developments in recent years have shown annual and seasonal variations with large amplitudes in terms of temperature, rainfall, and other factors that have influenced the stability of maize production in a negative way. In Romania, the areas most vulnerable to extreme agricultural drought are the southern and southeastern areas, especially Dobrogea, Baragan, southern Oltenia, Wallachia and Moldova, respectively, large maize growing areas.
Increasing the stability, as well as the level of performance of corn yield is possible only by creating genotypes that show tolerance to water stress.
The purpose of the research was to observe the behavior of some creations obtained in two breeding centers, in the climatic conditions and of the albic luvosol of the Pitesti Agricultural Research and Development Station. The biological material consisted of five hybrids from each center, of which the Turda 335 hybrid with a yield of 85 % and the Magnus hybrid with the mass of one thousand grains with a value of 248 g stood out.

EFFECT OF NEW $CACO_3$ FORMULATION ON CORN COBS

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Providing nutrition is a key factor in plant growth and development. Among the basic nutrients is calcium, in the form of ions (Ca^{2+}). In the present research, it was observed how the new formulations of this macroelement demonstrate the achievement of positive effects. From the conducted research it emerged that the production of cobs increased between 12 and 33% and the grain yield remained constant. Against the background of calcium fertilization, the cobs showed insignificant lengths between 19 and 22 cm. At the same time, an increase in grain production was found between 10-30% and the absolute grain weight (MTG) was generally higher than that of the control. Crude protein (PB%) in grains was between 9-12% with slight increases. The other quality elements showed slight decreases in the case of starch content, while the oil fell within insignificant parameters. Among the correlations obtained between the studied characters, negative values were noted between cob production and grain yield (r = -0.58), between grain yield and crude protein (PB%) (r = -0.810) and between the production of grain and oil content (r = -0.026). Positive correlations were obtained between cob production and mass of one thousand grains (MTG) (r = 0.882), between grain production and mass of one thousand grains (r = 0.828) and between grain production and grain moisture (r = 0.329). As a result of the research carried out, it was found that positive effects were obtained through liming the corn crop, which recommends the use of new formulations in production conditions.

RESULTS REGARDING THE INFLUENCE OF THE FUNGUS *DIDYMELLA PINODES*(BERK&BLOX) ON SOME MORPHOLOGICAL CHARACTERS AND QUALITY INDICES OF 2 VARIETIES OF PEAS IN THE YEAR 2023

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Pea (*Pisum sativum L*) is an important leguminous crop worldwide. In Romania, one of the most important diseases, which causes significant damage to the pea crop, is anthracnose (*Didymella pinodes*). The objective of this work was to estimate the influence of the attack produced by anthracnose, on some morphological characters and quality indices of yield in the pea crop. The tested biological material was represented by the Alvesta and Nicoleta varieties under the experimental conditions at ARDS Pitesti-Albota, in the year 2023. There was 5 variants tested: Variant 1 (untreated control); Variant 2 (fluxapyroxad + difenoconazole); Variant 3 (azoxystrobin + difenoconazole); Variant 4 (Biosem - biological product); Variant 5 (cyprodinil + fludioxonil). Determinations were made regarding plant height (cm), pod length (cm), pod number m ^{2}, pod weight (g), weight of a thousand grains (g). Based on the results obtained, the Alvesta genotype registered the best values of the determined indices and characters, when applying the fluxapyroxad + difenoconazole product. The highest average number of pods (472/ m^2) was obtained with the Alvesta variety, the variant with the application of the fluxapyroxad + difenoconazole product. The weight of the pods had values between 310 - 578 g/m^2 for the Alvesta variety, and for the Alvesta genotype the average was between 263 - 490 g/m^2. In the Nicoleta variety, lower values of the determined indices were registered.

THE DEGREE OF ATTACK PRODUCED BY *BRUCHUS PISORUM* L. IN AVATAR AND ALVESTA CULTIVARS

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Field pea is a crop with increased importance, because it is a rich source of proteins, carbohydrates and some minerals in human nutrition, but also animal feed. In crop systems, it also plays a significant role by improving the soil due to symbiotic nitrogen and its fixing capacity. Crop losses caused by insects are a threat to food security as a result of global growth. Production is the first to be affected by Bruchus pisorum, being the most important pest from an economic point of view, which causes significant losses in the pea crop. Infested seeds show reduced germination because the embryo is consumed and the grains can no loger produce new plants. The biological material was represented by two pea varieties, Alvesta and Avatar, analyzed in four repetitions, the frequency of the attack, the intensity and the degree of the attack produced by the weevil. The experience was established in the experimental field within the SCDA Pitesti station, where the treated variants were achieved by treating the seed with an ecological product.

THE INFLUENCE OF THE CLASSIC AND CONSERVATIVE TILLAGE SYSTEM ON THE ECONOMIC EFFICIENCY OF THE PEA CROP IN 2023

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This paper presents the results of the research carried out in pedoclimatic conditions at SCDA Pitești regarding the influence of tillage systems on the economic efficiency of the pea crop in the agricultural year 2023. The determination of economic efficiency was carried out according to the average physical yield for the year 2023, the yield value and the total cost of yield (cost of mechanical works + cost of materials). The pea yield in 2023 depending on the pedoameliorative and basic soil works varied from 1581 kg/ha to 3561 kg/ha. In the conventional deep plowed scarified soil system, the physical yield recorded an average value of 3561 kg/ha with a yield value of 7122 lei/ha. The yield cost was 4926 lei/ha, the net income 2196 lei/ha, obtaining a profitability value of 45%. The conservative system sown directly, in the variants with scarified soil recorded an average yield of 1693 kg/ha and a yield worth of 3386 lei/ha. Regarding the yield cost, the price was 4679 lei/ha. Net income and profitability recorded negative values of -1293 lei/ha, respectively -28%.

STUDY ON THE PRODUCTION COMPONENTS AND THE YIELD OF SOME VARIETIES AND LINES OF WHEAT

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Wheat occupies the second largest area after corn in Romania, being grown in a wide variety of soil and climate conditions. Therefore, it is necessary to ensure good quality biological material, able to respond to the adversity of biotic and abiotic factors and to achieve sustainable production. Within the Agricultural Research-Development Station Pitesti - Albota numerous studies are carried out on the behavior of a wide range of varieties and lines of wheat from the national list, aiming to obtain varieties with high capacity to adapt to environmental factors that characterize the adjacent area, especially in the conditions of global warming. In this paper we will present some of the results of a study on production components and yield of line A4-10, obtained at SCDA Albota, compared to a number of 24 lines and varieties from the national list, which come from other institutes and research stations of Romania in 2001-2002.

THE INFLUENCE OF SALINITY LEVEL ON THE THERMOGRAVIMETRIC RESPONSE OF BLACK BEAUTY ZUCCHINI)

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Thermogravimetric analysis (TGA) is a fundamental laboratory instruments applied for investigation of the material properties in various fields such as pharmaceutical, environmental, food and petrochemical applications. The differential thermal analysis (DTA) is common thermal analysis method in which an analyte and an inert reference are heating at a certain heating rate while any temperature change is recorded.
In this method, changes in the weight of a specimen are measured while its temperature is increased. Moisture and volatile contents of a sample can be measured by TGA. In our research, it provides qualitative and quantitative data for kinetics of thermal weight losses of the *Black Beauty* zucchini samples due to the influence of three salinity levels: 1g/l, 2g/l and 4g/l NaCl. The equipment used in this experiment is Shimadzu dtg-60h. The TGA thermograms for the fruits and leaves of the germinated zucchini in different salinity conditions were studied. For the zucchini leaves, an increase in the temperature at which certain reactions take place was noted, along with the increase in the salinity level. For the determination of structural chemical components, complementary methods such as IR and UV Vis spectroscopy are necessary.

Online Session

SOME IMPROVEMENTS IN AQUACULTURE

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In aquaculture, it should be known at what stage fish require a certain amount of feed and how often to feed them. According to the availability of feeds or the type of food given to the fish, the system of aquacultural production can be defined as extensive (no feed is given), semi-intensive, and intensive.
Certain facts effecting fish growth or feed acceptance, such as fish behavior, ecology (relationships between the living environment and the organism), nutrient requirements, energy metabolism, feed type and size, etc., should be known independently from production types, i.e., monoculture, polyculture, fish species, i.e., warm water, cold water, etc.
Aquaculture developments will be related to Industry 4.0 or Society 5.0 since it is both a social and a scientific concern. Therefore, some novel and disruptive technologies such as blockchain for marketing, artificial intelligence, offshore farming, genome editing, oral immunization, recirculating aquaculture systems and internet of things (IoT) will be employed for sustainable and successful aquaculture.
Since the aquaculture includes the exploitation of live material for human consumption. Some of the most recent technology applied to aquaculture production, either directly or indirectly, will be highlighted for smart fish farming in this presentation.

CALENDULA OFFICINALIS PERSPECTIVE PLANT FOR THE BIOPROTECTION

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Calendula officinalis L. (Linnaeus, 1753), an annual herb in the Asteraceae family, stands out for its unique characteristics. This species, native to the Mediterranean region, is a natural treasure of Europe and Ukraine. Beyond its aesthetic appeal, it serves as a rich source of biochemical compounds, finding applications in cosmetics, pharmacology, and even culinary arts. Its versatility is evident in its use in drugs, medicines, decoration, and food.

With the widespread use of *Calendula officinalis*, breeding programs are actively exploring ways to enhance its agronomic, chemical, and yield components. Among these, mutation breeding has emerged as a promising approach to augment the genetic diversity of crops. Chemical mutagens, in particular, are gaining traction, showcasing the potential of this method in *Calendula officinalis*.

Calendula officinalis has long been used because of its rich ethnomedicinal importance. Several classes of biochemical compounds were identified in *C. officinalis* inflorescences, including essential oil, carotenoids, flavonoids, terpenoids, coumarins, quinones, amino acids, lipids, and carbohydrates. These compounds can be used for various pharmaceutical and medicinal purposes: as an antioxidant, anti-inflammatory, anti-bacterial, anti-fungal, anti-cancer, anti-HIV, to promote wound healing, and more. These pleiotropic effects support the fact that the plant may be used to treat and prevent several therapeutic conditions. Also, the extracts of *Calendula officinalis* can be used to treat other plants, especially in case of microbial or fungi infections. The roots of *Calendula officinalis* stand out many substances in soil and, in this way, can prevent the growth of many pathogens.

Interest in *C. officinalis* as a good source of biocompounds is growing. The content of biochemical compounds within *C. officinalis* varies widely, depending on the inflorescence's colour and the ligulate florets' rate.
However, future studies are needed to investigate the other hidden effects exhibited by the plant in order to make the plant proficient in herbal drug therapy and useful as a bioprotector for plants.

ASSESSMENT OF CLIMATE CHANGE IMPACT ON RUNOFF USING MARKSIM GCM IN TOKAT REGION

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The impact on water resources has been increasing in the Tokat Region recently due to faulty urban planning, rapid population growth, increasing industrialization and inappropriate land use. Considering the impact of climate change as well, it is regarded as a serious environmental problem. Research on the impact of climate change on soil and water resources in the region is very limited. This study aims to determine the impact of climate change on water resources in the Tokat region. For this purpose, the GFLD-CM3 model was utilized to generate weather data under the RCPs scenario, i.e RCP 2.6, 4.5, 6.0, and 8.5 for the years 2010, 2035, 2065, and 2095 for the Tokat region. The WEPP Hillslope model predicted precipitation, temperature, and runoff. The relationship between the predicted data and the observed data for four different scenarios and four different periods was compared.

COMPARATIVE ANALYSIS OF CIRCULAR ECONOMY INDICATORS ACROSS EUROPEAN COUNTRIES

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Circular economy is a development strategy that is based on the principle of reduction, reuse and recycling, also called the 3-R principle aiming to create a closed-loop system where the outputs of one process become the inputs for another, fostering efficiency and resilience. The development of the circular economy by production sectors involves implementation of sustainable practices working towards minimizing waste, optimizing resource efficiency by use of by-products and regenerate natural systems. In agrofood sector, this can be practically translated in various strategies such as recycling organic waste to create fertilisers for soil enrichment, employing precision farming techniques to minimize input use while maximizing yields, adopting agroecology practices to enhance biodiversity and soil health, and promoting local food systems to reduce transportation emissions. In this context, the purpose of the paper is to analyse the dynamics of circular economy indicators with impact on the agrifood sector at the level of the EU countries, thus comparing the diversity of circular economy implementation levels.

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PROPAGATION PERFORMANCES OF GRAPEVINE WITH CUTTINGS IN DIFFERENT ROOTING MEDIA

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Vegetative propagation is one of the most common method used in plant species. Although there are different methods, the most commonly used tool for some fruit species is propagation with cuttings. This method is a practical and low-cost method, but plant species have different performances in this regard. In addition to the species used in propagation by cuttings, the rooting medium used also affects success. Grapevine is known to be species that is easy to propagate by cuttings. In this study, the effects of different rooting media on rooting performances (rooting rate, number of roots, root length) were examined in 'Dimrit' grapevine cultivars. Perlite, pumice, river sand and peat were used as media. One-year-old hardwood cuttings were used as plant material. The experiment was designed with 3 replications and 15 cuttings in each replication. The working environment was a greenhouse, and materials watered from above in the form of misting daily. The cuttings were taken from the environment 90 days after being placed in the environment and the relevant parameters were measured. Significant effects of media on rooting parameters were found. Accordingly, the rooting rate was 100% in perlite, pumice and river sand environment, while it was 9.5% in peat environment. Root length was found to be highest in perlite medium (12.05 cm) and lowest in peat medium (7.26 cm). While the pumice environment provided the highest number of roots (50.2), peat gave the lowest number of roots (12.0). The study reveals that rooting media have different effects on measured parameters in grapevine. While perlite, pumice and river sand were found to be successful media for the propagation of grapevines by cuttings, peat was not found to be effective.

COMPETITIVENESS LEVEL EVALUATION INSTRUMENT FOR NEW PRODUCTS

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Given the substantial failure rates associated with newly developed products, this paper introduces a new function specifically designed to support companies in decision-making processes during product development and launch. This function is versatile, applicable at any stage of testing, including the initial conceptualization phase where it can be integrated with virtual reality to gather early consumer feedback. However, its optimal use is recommended during the market testing phase. This crucial phase immediately precedes the product's launch, providing a pivotal moment for assessing market receptiveness and potential consumer response. By employing this function, companies can effectively analyze feedback and performance metrics, enabling them to make informed decisions about whether to proceed with the launch, delay it for further enhancements, or even abandon the project based on the insights gathered. This strategic tool is designed to be adaptable across both open and closed innovation models, offering a robust framework for reducing the risk of product failure and increasing the likelihood of market success.

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FORAGE NUTRITIVE QUALITY AND SOME VITAMIN CONTENTS OF *DORYCNIUM GRAECUM* (L.) SER. AND *DORYCNIUM PENTAPHYLLUM* SCOP.

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The research was conducted to determine the some forage quality traits, some macro and micro mineral, α-tocopherol, β-carotene and ergocalciferol content of *Dorycnium graecum* (L.) Ser. and *Dorycnium pentaphyllum* Scop.. The samples were obtained in 2021 at end of flowering-beginning of pod binding stage, from the north side of The Ganos mountain of Thrace, Turkey, with a typical subtropical climate. According to the results of the research *Dorycnium graecum* (L.) Ser.'s plant height varied between 32.00-56.00 cm, number of stems 5.00-12.00 pcs, stem diameter 1.00-5.1 mm, fresh above ground biomass 20.00-60.00 g/plant, dry above ground biomass 3.45-25.50 g/plant, crude protein 16.98-17.18%, crude ash 5.02-5.15%, ADF 29.04-29.13%, NDF 43.18-43.33%, P 0.22-0.27%, K 1.88-1.98%, Ca 1.47-1.51%, Mg 0.29-0.33%, Fe 0.233-0.237 mg g-1, Cu 1.29-1.32 mg g-1, Zn 0.024-0.029 mg g-1, Mn 0.014-0.017 mg g-1, Mo 0.191-0.194 mg g-1, α-tocopherol 122.95-123.14 mg kg-1, β-carotene 321.20-321.90 mg kg-1, ergocalciferol 6.97-7.06 mg kg-1, DDM 66.22-66.28 %, DMI 2.77-2.78%, RFV 142.29-142.72, TDN 62.86-62.91, Nel 0.646-0.647, Nem 0.697-0.698, Neg 0.369-0.371. *Dorycnium pentaphyllum* Scop.'s plant height varied between 25.00-83.00 cm, number of stems 2.00-67.00 pcs, stem diameter 1.70-3.90 mm, fresh above ground biomass 30.00-450.00 g/plant, dry above ground biomass 7.15-186.60 g/plant, crude protein 15.99-16.75%, crude ash 5.13-5.66%, ADF 28.36-29.12%, NDF 42.17-42.38%, P 0.24-0.29%, K 1.97-2.04%, Ca 1.49-1.54%, Mg 0.27-0.31%), Fe 0.224-0.229mg g-1, Cu 1.26-1.31 mg g-1, Zn 0.026-0.030mg g-1, Mn 0.013-0.017 mg g-1, Mo 0.187-0.192 mg g-1, α-tocopherol 122.20-123.12 mg kg-1, β-carotene 320.18-320.78 mg kg-1, ergocalciferol 6.68-6.72 mg kg-1, DDM 66.22-66.85%, DMI 2.83-2.85%, RFV 145.58-147.54, TDN 62.86-63.99, Nel 0.651-0.711, Nem 0.697-0.711, Neg 0.371-0.382 respectively.

CONTRIBUTION TO THE PHYTOCHEMICAL STUDY OF STEPPE A "Remth" *HAMMADA SCOPARIA* (POMEL) IN THE NAAMA REGION

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Remth (*Hammada scoparia*) is a steppe medicinal species characteristic of the Oran Saharan Atlas and belongs to the Amaranthaceae family. The objective of the present study is to test the phytochemical composition of the *Hammada scoparia* species in the Naâma region. The results obtained revealed a level of polyphenols equal to 238.86 eq mg of gallic acid/g and a level of flavonoids of the order of 52.05 eq mg of catechin/g of dry plant material. The results of essential oil extraction by hydro-distillation represented a yield of 0.18% per 100 g of dry matter. This steppe species deserves to be valued on a large scale for its therapeutic, socio-economic and ecological effects.

EFFECT OF PROTECTION BY FENCING ON THE DIVERSITY OF THE STEPPE AT *STIPA TENACISSIMA* IN THE NAÂMA REGION (ALGERIA)

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The South Oranian steppe of Naâma (Algeria) constitutes a representative example of arid zones threatened by the scourge of desertification. This vast steppe expanse of three million hectares is in continuous degradation under the pressure of multiple anthropogenic and climatic effects, through the aggravation of desertification and silting processes. Thus, it has resulted in a progressive decrease and has reduced both quantitatively and qualitatively pastoral potential. Faced with this alarming situation, the State has undertaken various restoration or rehabilitation measures which are part of a national strategy for the pastoral improvement of degraded steppe rangelands, the fight against silting with a view to combating desertification. Among the solutions proposed for the rehabilitation of these degraded paths, the technique of fencing has recorded ecological advantages. This technique promotes natural regeneration, the most suitable for inducing the natural biological recovery of steppe species. The floristic diversity of the *Stipa tenacissima* steppe is very particular due to its biological, systematic and phytogeographic characterization. This examination highlights the importance of the fencing technique in terms of the rehabilitation and restoration of steppe rangelands under an arid

bioclimate. The protection allows a quantitative and qualitative increase in floristic richness, a development of pastoral species in particular therophytes. This results in a significant phytomass, and a relatively high vegetation cover. The floral composition is very diverse. It has promoted the resettlement and reappearance of species threatened with extinction. From these results we can emphasize the interest and constructive impact of the protection in terms of recovery, floristic richness and phytomass. This aspect of vegetative reconstitution ensures the sustainability of the plant cover; it cannot be achieved only with the collaboration of different parts of pastoral society.

DNA BARCODING OF SOME LICHENIZED AND LICHENICOLOUS FUNGI FROM GALINDEZ ISLAND (ANTARCTIC PENINSULA, ANTARCTICA)

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Galindez Island (65° 15′ S, 64° 15′ W) is one of the Argentine Islands located in the West Antarctic Peninsula, 5-6 km away from the main continent. It has a total surface area of 0.8 km2 and an annual temperature range of 9–13°C. There are not many studies providing information about lichenized fungi on Galindez Island. In this context, it is important to conduct research on lichenized fungi from Galindez Island. In this study, it was aimed to DNA barcoding of some lichenized and lichenicolous fungi from Robert Island (Antarctic Peninsula, Antarctica).

Lichenized fungi collected from Robert Island at 2016-2017 Austral Summer. For the identification of lichen samples stereo and light microcsope used. After anatomically and morphologically identified, DNA isolation was carried out. DNA isolation was performed using Dneasy Plant Mini Kit (Qiagen, Catalog No: 69104). The obtained DNA was amplified in PCR using the nrITS primer and after being checked in agarose gel electrophoresis, DNA sequence analysis were made. The sequences obtained from the analyzed samples were compared with the samples uploaded in GenBANK (NCBI) using the BLAST program. Alignment and editing of raw data was done using the Bio Edit 7.2.5 (Biological Sequence Alignment Editor) software program. The alignment process was carried out using the crustal W module. This process was done separately for each sample and each base was checked one by one. In the phylogenetic trees, Maximum Likelihood method was used and tree was made in MEGA XI program.

As a result of the study, DNA barcoding of the following samples was successfully carried out: *Lecanora intricata* (Ach.) Ach.,

Mastodia tessellata (Hook. f. & Harv.) Hook. f. & Harv., *Raesaenenia usneae* (C.W. Dodge) Etayo & Pino-Bodas, *Rhizocapon grande* (Flörke ex Flot.) Arnold, *Umbilicaria umbilicarioides* (Stein) Krog & Swinscow.

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IN VITRO REGENERATION EFFICIENCY OF SOME TURKISH PEPPER GENOTYPES

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Pepper is one of the important vegetables consumed in different ways in the world Pepper cultivation is done in many regions of our country. Recently, tissue culture methods have been used to increase yield and quality and to obtain plants resistant to diseases and pests. The basic system used in plant tissue culture processes and genetic improvements is plant regeneration. Tobacco and petunia became a model for the study of certain aspects of modern biotechnology and molecular biology about thirty years ago. Additionally, transgenic tomato and eggplant varieties have been introduced to the market and have reached the stage of different field trials. However, pepper (*Capsicum annuum* L.) is a little behind the age of advanced biotechnology and transgenic breeding. In this study, it was aimed to determine the regeneration efficiency using some local Turkish pepper genotypes. In the study, 15 pepper genotypes grown as standard in Turkey were used and callus formation from explants of the genotypes and transformation from callus to plant were examined. According to the obtained results, callus formation among pepper genotypes was between 0-60%, while the transformation from callus to plant was between 0-25%. Results of present study may contribute to gene transfer studies and micropropagation studies in pepper.

DETERMINATION OF THE EFFECT OF DIFFERENT STERILIZATION PROTOCOLS FOR IN VITRO SHOOT TIP CULTURE IN SOME WILD PEAR (*P. ELAEAGRIFOLIA*) GENOTYPES

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Wild pear is one of the rootstocks used in pear cultivation. It is one of our most important genetic resources, especially because it is resistant to drought conditions and iron chlorosis. Besides its positive features, its use as a rootstock also has some disadvantages. In vitro propagation methods have gained importance in clonal propagation, especially due to the difficulties encountered in germination from seeds and problems in rooting with cuttings. With this method, mass production can be achieved in a short time. However, as in other species, contamination is the biggest obstacle in in vitro culture in pear. There is no valid protocol yet for surface sterilization processes for micropropagation of wild pear. New studies are needed for this purpose. The aim of this study was to determine the sterilization conditions suitable for the shoot tip technique to be used in in vitro propagation of some pear species. In the study, 4 different sterilization methods were applied to shoot tip explants of the wild pear genotype obtained from 6 different regions, and bacterial and fungal infection and plant development were examined in the explants. According to the results of present study, the contamination rate varied according to genotype and sterilization methods.

EFFECT OF SOWING TIME ON HERBAGE YIELD AND HERBAGE QUALITY IN ELEPHANT GRASS VARIETIES

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The aim of the study is to examine some morphological characteristics of sowing time, green and dry herbage yield and herbage quality characteristics of different elephant grass varieties in Kayseri conditions. For this purpose, elephant grass varieties (Imparator and Nopier) were established randomized blocks – split plots design with three replications on 15 April, 1 May and 15 May. However, the seedlings sowed on April 15 could not complete their development. The effect of variety and sowing time on yield and quality characteristics was found to be significant ($p \leq 0.01$).
According to the research results, plant height values varied between 177 cm and 235 cm, number of tillers 9.67-20.33, green herbage yield 2620.73-5338.46 kg/da, dry herbage yield 509.33 kg/da and 1072.67 kg/da. The crude protein ratio of elephant grass varies between 7.52%-8.83%, the crude fiber ratio 37.78-39.73%, the crude ash ratio 12.01-13.23%, the ADF ratio 39.57-41.74%, the NDF ratio 69.18-71.22% and the ADL ratio 3.59-3.88%. has shown. Although our herbage quality values were found to be similar to those of other researchers, our yield values were low. It was concluded that Kayseri region is not suitable enough for elephant grass. Despite the low yield values, the Emperor variety and the 15 May sowing date are recommended for elephant grass cultivation in Kayseri and similar ecologies.

INVESTIGATION OF SALINITY TOLERANCES OF SOME ANNUAL GRASS TYPES IN VIVO

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The aim of present study: determination of the salt tolerance of annual grass cultivars in vivo pot experiment. In the study, 25 registered grass varieties were used as material. Salt concentrations of 150 mM NaCl were applied to determine the response of annual grass varieties to salt stress. Root length, shoot length, root-shoot fresh weight and root-shoot dry weight were examined in vivo pot experiment. In the characteristics examined in the pot experiments, two stages were examined: first cutting and second cutting and plant height, shoot fresh weight and shoot dry weight values were examined in salt and control applications. In terms of these examined characteristics, the lowest value in the first cutting control group was obtained from Quickston and Vallivert varieties, while the highest value was obtained from Rambo, Tetra and Ration varieties. Again, in the first form salt application, the lowest value was obtained from Quickston and Vallivert varieties, while the highest value was obtained from Devis, Baqueno and Hellen varieties. In the second cutting control group, the lowest value was obtained from Quickston, Venus varieties, while the highest value was obtained from Rambo, Baqueno, Vallivert varieties. Again, in the second form salt application group, the lowest value was obtained from Kartetra, Quickston, Efe varieties, and the highest value was obtained from Teanna, Jako, Master varieties. As the result of present study, the obtained variation among the annual grass varieties used in the study can be used both in the grass application and in breeding programs.

COMPARISON OF PHENOLIC AND ANTIOXIDANT SUBSTANCE CONTENT OF SOME KIDNEY BEAN GENOTYPES

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Kidney bean, known for its valuable vegetable proteins, holds a significant place among leguminous plants due to its high protein content, as well as carbohydrates, vitamins, minerals, phenolic compounds, and antioxidant contents. Among leguminous plants identified as the most fundamental food for human consumption worldwide, kidney bean stands out not only for its rich nutritional content but also for significantly improving soil fertility, promoting advantageous dietary and health trends.
The study aims to compare 15 different kidney bean genotypes in terms of total phenolics, total flavonoids, tannins, and antioxidant activities. Among the genotypes, genotype A4 has the highest content of total phenolic substance (572.09 mg GAE/g), total flavonoid substance (49.37 mg CE/g), DPPH (92.14%), ABTS (14.26 µg TE/g), total hydrolyzable tannin (8.94 mg/kg), and ferric reducing antioxidant activity (10.55 mg AAE/g), while genotype A7 has the lowest value in terms of total phenolic substance (153.01 mg GAE/g), DPPH (28.92%), condensed tannin (102.86 mg/kg), ferric reducing antioxidant activity (3.87 mg AAE/g), and ABTS (4.71 µg TE/g). The study concludes that the different colors of the identified genotypes lead to significant differences in phenolic and antioxidant contents.

BIOLOGICAL ACTIVITIES OF ANTIMICROBIAL BIOSURFACTANTS PRODUCED BY *BACILLUS* STRAINS

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Pesticides and fungicides are the main control systems used to control biotic agents responsible for pre- and post-harvest rot. In order to ensure effective control, various microorganisms with a wide potential for biological effects are being examined and studies are ongoing. Antifungal secondary metabolites, non-ribosomal cyclic lipopeptides, of some *Bacillus* strains are effective against fungal pathogens. In present study, local *Bacillus* strains SY29.1, SY35.3, SY491, KH16.2 and KH13.3 stored in our stock cultures were grown in enriched medium (sucrose 20; NH_4Cl 3; KH_2PO_4 3.5; Na_2HPO_4 5; $FeSO_4 \cdot 7H_2O$ 8.5 µM; $ZnSO_4 \cdot 7H_2O$ 0.04 mM; $MgSO_4 \cdot 7H_2O$ 0.2 mM; $MnSO_4 \cdot H_2O$ 0.02 mM; yeast extract 0.5) through incubating at 30°C and 180 rpm for 4 days. Then, crude extracts of lipopeptides were obtained and used in antifungal activity trials. Experiments were carried out on *Fusarium oxysporum* f. sp. *lycopersici* (FOL) and *Fusarium oxysporum* f. sp. *radicis-lycopersici* (FORL) using disk diffusion method. The experiments were also verified by adding biosurfactants into fungal inoculums and then counting the cells. Lipopeptides of *Bacillus* sp., SY29.1 were effective at 50 and 100ul/1x108cfu for FORL. However, the effectivity of the same metabolites were two times low for FOL. The lipopeptides of *Bacillus* sp., SY35.3 were effective against the same fungal strains at 100ul/$1x10^8$ cfu dose. Lipopeptides of *Bacillus* sp., KH16.2 and KH13.3 strains were effective on FOL at 50ul. It was concluded that

the pure extracts of the same biosurfactants can be more efficient for development of fungicide to be used in agriculture.

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SOMATIC EMBRYOGENESIS IN SAINFOIN (*ONOBRYCHIS VICIIFOLIA* SCOP.)

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Sainfoin (*Onobrychis viciifolia* Scop.) is a perennial legume used for forage production. The aim of this study was to investigate the effects of different basal media (Murashige&Skoog-MS, Schenk& Hildebrant-SH, Gamborg-B5 or CHU-N6), explant types (cotyledon and hypocotyl), and growth regulators (kinetin and thidiazuron) on the induction of somatic embryogenesis in sainfoin. For this purpose, hypocotyl and cotyledon explants isolated from in vitro grown sterile seedlings were cultured in solid MS, SH, B5, or N6 basal media supplemented with 2 mg/L 2,4-dichlorophenoxyacetic acid, 0.2 mg/L kinetin or thidiazuron, and 1 g/L proline. The developing embryonic callus was then transferred to a solid MS medium containing 3% sucrose. As a result of the experiment, callus weights per explant varied between 248.3-534.7 mg, 408.7-609.1, 220.3-537 mg and 127.3-428.3 mg in MS, B5, N6, and SH basal media respectively, depending on explants and growth regulators. Average callus weights were higher in B5 and N6 basal media than in MS and SH media, TDZ-containing media than kinetin containing media and cotyledon explant than hypocotyl explant. The highest frequency of explants developing somatic embryos (mean 33.3%) was obtained from kinetin-containing MS or B5 basal media, while the highest embryo per explant (mean 2.6 somatic embryo per explant) was obtained from kinetin-containing MS medium. The somatic embryo number per hypocotyl explant was higher than that of cotyledon explants.

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DETERMINATION OF GRAIN YIELD AND YIELD COMPONENTS OF SOME MAIZE (*ZEA MAYS* L.) CULTIVARS UNDER KAYSERI CONDITIONS

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Maize (*Zea mays* L.) is an important cereal widely used in human and animal nutrition. This study aimed to determine the grain yield, yield components and quality characteristics of some maize cultivars. The study was conducted in Erciyes University Agricultural Research and Application Centre experimental field in 2019, according to the randomized block design with 3 replications. 928 HP F1, DKC 7240, Hiva F1, Kerbanis, Kilowatt, Klosseus, Kontigos, NK Vitorino, Simpatico, Sy Antex, Sy Dracma and Sy Inove maize cultivars were used as material. According to the results of analysis of variance, the differences among the cultivars in terms of ear diameters, ear weight, number of kernels per ear were found statistically significant at 1% level, while the differences in ear length, kernel weight in ear, thousand kernel weight, grain yield and seed protein content were found statistically significant at 5% level. As a result of the research, ear length varied between 18.89 cm (Simpatico) and 21.64 cm (Kilowatt), ear diameters between 44.05 mm (Simpatico) and 53 mm (DKC 7240), number of kernels per ear between 579.5 (Simpatico) and 710.43 (928 HP F1), kernel weight in ear between 164.43 g (Simpatico) and 248.13 g (Kontigos), ear weight between 28. 92 g (Simpatico) and 63.87 g (Klosseus), grain yield between 1174.38 kg/da (Simpatico) and 1772.17 kg/da (Kontigos), 1000-kernel weight between 272.85 g (Simpatico) and 331.91 g (Hiva F1), and seed protein content between 6.02% (Sy Dracma) and 7.71% (Simpatico).

EVALUATION OF THE USABILITY OF ANCESTRAL HULLED WHEAT *T. BOEOTICUM* BOISS IN COPING WITH GLOBAL CLIMATE CHANGE BASED ON CELLULAR ANTIOXIDANT RESPONSES

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The primary impact of global climate change on grains is due to problems in the water supply. Decrease in precipitation and regime change (unbalanced and irregular rainfall) due to climate change and extreme temperature increases have led to the need for human-made irrigation of crops. Because of excessive and unconscious irrigation, groundwater decreased rapidly, and soil salinity/sodicity increased rapidly. As a result, inefficiency occurred because of the excessive salinization of the soil. Soil salinization is the second leading cause of soil degradation after soil erosion, severely restricting plant growth and development and affecting crop yields, and has caused a decline in agricultural activities for over 10,000 years. Misuse of fertilizers, excessive irrigation, and industrial pollution are the main causes of widespread soil salinity, which poses a serious threat to agricultural productivity and food security for both humans and animals. Salinity problems can occur under all climatic conditions and can be caused by both natural and human-induced effects. Soil salinity is dynamic and spans more than 100 countries globally; No continent is completely free of salinity. However, salinization causes the loss of approximately 2000 hectares of arable land per day in the world and a 10-25% decrease in crop yield, and at advanced levels, it can decertify the soil and cause complete loss of crops. The development of crops that can grow normally in saline soils is fundamental to solving this problem. High ion concentrations in the soil (such as sodium, potassium, chloride, calcium etc.) cause both

osmotic and ionic stress, which reduces the water and nutrient uptake capacity of plants. The development of crops that can grow normally in saline soils is fundamental to solving this problem. Wheat species that have remained unchanged for more than a hundred years are called ancient wheat. Most ancient wheat has a husk that must be separated from the grain in the mill and is therefore also known as hulled. Hulled are typical examples of underutilized plant species. These species are of great importance in terms of food security and local cultural value, but they are relatively unknown and undervalued in commercial production. Often neglected by researchers and policymakers, many underutilized species are at risk of extinction for different reasons, from agricultural and genetic factors to economic and cultural factors. Although previous studies have declared that emmer wheat can be grown as a suitable crop using organic agriculture in marginal areas, today emmer wheat is currently grown in less than 1% of the world's wheat area. Although small numbers of reactive oxygen species (ROS) act as signals that trigger abiotic stress responses to the adaptation process, their excessive production causes oxidative damage. Due to their excessive production, oxidative damage occurs in membranes (lipid peroxidation), proteins, nucleic acids, RNA, and DNA. Chloroplasts, mitochondria, peroxisomes, cell membranes and structural organelles, and apoplasts and nucleus are the main ROS production sites. Plants contain an antioxidant defense system in their cellular organelles that scavenges different ROS to a certain level, both enzymatic [ascorbate peroxidase (APX), monodehydroascorbate reductase (MDHAR), dehydroascorbate reductase (DHAR), glutathione reductase (GR), superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPX), glutathione S-transferase (GST) and peroxiredoxin (PRX)] and non-enzymatic [ascorbate (AsA), glutathione (GSH), carotenoids, flavonoids and tocopherols]. If ROS production is higher than the scavenging ability of the antioxidant system, oxidative damage occurs. In this study, we used *T. aestivum* cv. *Gerek*, a modern cultivated wheat from Turkey, and *T. boeoticum* Boiss, an ancient hulled emmer wheat. We attempted to estimate the tolerance of wheat and the ancient hulled wheat, to salt stress both

under salt stress and by applying glycine-betaine, based on antioxidant responses, and tried to predict to what extent they can be processed in saline soils. As salt stress, $CaCl_2$ (25-50-100-150-200 mM) and $CaCl_2$+Glycine-betaine (GB) (150 mM $CaCl_2$+1.0 mM GB and 200 mM $CaCl_2$ + 1.0 mM GB) were applied. The enzymatic and non-enzymatic responses of wheat to salt stress were analyzed separately in the roots and leafy stems of the plant. According to the results of the study, the calcium chloride salt was above 50 mM in *T. aestivum* cv. *Gerek* and above 100 mM in *T. boeoticum* Boiss, it causes high levels of stress at concentrations. When glycine-betaine is applied together with calcium chloride, the damage caused by salt stress can be significantly eliminated at 50, 100, and 150 mM salt concentrations. Both *T. aestivum* cv. *Gerek* and *T. boeoticum* Boiss were severely damaged at 200 mM salt concentration, and stem length, leaf length, and chlorophyll contents decreased by approximately 80% compared with the control. However, when 1 mM GB is applied together with 200 mM salt stress, the damage to wheat can be compensated by approximately 90% compared with the control. It has been observed that the *T. boeoticum* Boiss variety has approximately 2-3 times more activity capacity than the modern-cultivated wheat *T. aestivum* cv. *Gerek* in terms of both enzymatic and non-enzymatic antioxidant capacity. According to these results, it is predicted that the ancient hulled wheat *T. boeoticum* Boiss can be used effectively in bringing saline/sodic areas into agriculture.

PHYSICO-MECHANICAL, PETROGRAPHIC AND VISUAL PROPERTIES OF GEOMATERIALS USED IN THE CONSTRUCTION OF ELBISTAN KAYNARCA BIOLOGICAL POND (KAHRAMANMARAŞ/TURKEY) RECREATION AREA

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In this study, both the petrographical, physico-mechanical and aesthetic characteristics of the geological materials used in the construction of the Kaynarca Pond recreation area, which was built on the Ceyhan River originating from the centre of Elbistan district of Kahramanmaraş province, located in the southeast of Turkey, were revealed. According to petrographic determinations, four different rock types were used in the construction of the pond: andesite with hyalomicrolitic-porphyritic and intersertal texture, olivine basalt with intersertal and amygdaloidal texture, fossiliferous limestone and marble with granoblastic texture. For the andesite, olivine basalt, limestone and marble samples, average unit volume weights are 2.31 g/cm^3, 2.63 g/cm^3, 2.13 g/cm^3, 2.66 g/cm^3; specific gravities are 2.43, 2.71, 2.32, 2. 71; porosities are 4.61%, 3.01%, 10.63%, 0.67%; water absorption values are 1.93%, 1.13%, 4.81%, 0.25%; Böhme abrasion loss values are 3.07 cm^3/50cm^2, 4.90 cm^3/50cm^2, 14.48 cm^3/50cm^2, 8.39 cm^3/50cm^2; Los Angeles abrasion loss values are 47.52%, 50.72%, 70.20%, 60.57%; uniaxial compressive strengths are 68.41 Mpa, 78.21 Mpa, 30.49 Mpa, 65.60 Mpa; bending strengths are 13.99 Mpa, 21.77 Mpa, 6.84 Mpa, 12.36 Mpa; Mohs hardness values are 5.5, 5.5, 3, 4; ultrasonic sound transmission velocity values are 2437m/s, 2962m/s, 1768m/s, 3182m/s and thermal conductivity coefficients are 2.437 W/Mk, 2.962 W/mK, 1.768 W/mK, 3.182 W/mK respectively. In terms of

aesthetics, among the rock samples subjected to polishability and rusting tests, only the marble sample showed polishability, while a slight discolouration was observed in the olivine basalt sample due to existing ferromagnesian minerals and especially iddingsitized olivines, and no change was observed in the other rocks in rusting test. The pond floor was covered with grey and red clays in order to prevent swamp formation on the ground by opening the water pores and it was determined that the liquid limit values of these clays were between 30-35% and the plastic limit values were between 20-25%. In Kaynarca Pond recreation area, it was determined that the average size of the pebbles scattered on the shore edge as filling material and for landscaping was between 19-25 mm and the sand was 2.360 mm in diameter. As a result of the tests carried out, it is considered that the geomaterials used in the area are generally suitable for the usage in the recreation area.

DETERMINATION OF STOMATAL MORPHOLOGY IN SOME *CITRUS* SPP. SPECIES

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Citrus spp. fruits belonging to the Rutaceae family include sour and bitter oranges, sweet oranges, pomelo, grapefruit, citrons, lemons, oranges, bergamots, mandarins, limes, etc, consists of a wide variety of hybrids and hybrid individuals. In this study, it was aimed to determine the stomatal morphology of 6 different *Citrus* spp. species (*C. lemon* L., *C. paradisi* L., *C. aurantium* L., *C. sinensis* L., *C. bergamia* L., *C. reticulata* Blanco) grown in the ecological conditions of Hatay/Türkiye. Stoma width: 1666.47±231.63 µm (*Citrus paradisi* L.) - 2432.79±86.13 µm (*Citrus bergamia* L.); stoma length: 1884.40±239.82 µm (*Citrus paradisi* L.) - 2959.70±327.63 µm (*Citrus bergamia* L.); stoma density varied between 1007±83.56 stoma/mm² (*Citrus reticulata* L.) and 1172±84.67 stoma/mm² (*Citrus paradisi* L.). As a result of the correlation matrix analysis, a positive correlation was found between stoma width and stoma length ($r=0.90$, $p<0.05$). According to principal component analysis, the first three components explain 96.8% of the total variation. According to the heatmap analysis, *Citrus reticula* L. formed a group, while other *Citrus* spp. species formed a group. Stoma morphology was divided into two groups. Stomatal density, stomatal shape coefficient and pore width were included in one group, while other morphological criteria were included in another group.

SOME CONSIDERATIONS REGARDING THE ROLE OF NATURAL EXTRACTS AS ALLEVIATORS OF ABIOTIC STRESS IN PLANTS

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Lately, researchers are studying different ways to obtain and use natural products that improve plant productivity, but that reduce the abiotic stress caused by different environmental factors. It has been shown, for different plant cultures, that natural extracts are able to activate different metabolic pathways, to alleviate water or saline stress in a cheap and nature-friendly way.
Various types of abiotic stresses that plants encounter between seedling to harvest stages are:

- Unseasonal rain;
- Abundant and copious soil moisture or its quick retreat;
- Soil salinity;
- Micronutrient (soil nutrition) shortage in the root zone;
- Global change in weather patterns

There are already many commercial products obtained from seaweed, used in agriculture. The vast majority of these products are obtained from the seaweed Ascophyllum nodosum. Seaweed extracts are used, for many species of cultivated plants, in order to stimulate physiological processes. Specialists are concerned with extracting, testing and obtaining such natural products, which improve production and increase resistance to stress factors. The explanation of these effects is based on some compounds that act together, at different concentrations, and the mode of action is still under study.

SURFACE WATER POLLUTION, FROM MINING INDUSTRY, IN SASHTINSKA SREDNA GORA AND CENTRAL STARA PLANINA: A REVIEW

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There can be no doubt that human activity inevitably has an impact on the environment and ecosystems. The mining industry (MI) is one of the most polluting industries globally. It is a significant contributor to water, soil and air pollution, erosion and landslides, among other factors. These have the potential to restrict the use and increase the scarcity of resources, and often result in the reduction or disappearance of flora and fauna species. In addition to its impact on biodiversity, the MI is responsible for the overall reduction in the quality of the surrounding areas, including their environmental services. The pollution caused by MI often persists for decades after the cessation of extraction activities.

The territory of Bulgaria is replete with evidence of extensive historical extractive activities, particularly for metals. Following the implementation of structural reforms to the mining industry at the end of the 1990s, numerous mines ceased operations without conducting an environmental impact assessment or implementing a post-activity monitoring and reclamation programme.

A considerable body of literature currently exists on the impact of the mining industry on the environment and human health in Bulgaria. These studies encompass a range of research areas, including levels of metal pollution, hydrogeological and physicochemical parameters of the investigated regions, as well as the biological impacts of heavy metals, their bioaccumulation and biomagnification, and toxicity to different organisms.

Despite the large number of studies carried out on the subject, the results are difficult to compare due to the different methodologies used to assess the quality and impact on surface waters contaminated

with heavy metals and metalloids in Bulgaria. For many of the heavy metals, there are no accepted maximum permissible concentrations (MPCs) and authors use different approaches to assess pollution levels, such as: background or averaged concentrations, contaminant toxicity, relative values or expert judgement, depending on the study objectives.

Boiadjiev (2012) identifies six distinct mining regions in Bulgaria: West Balkan, West Rhodopy, Eastern Rhodopy, Eastern Sredna Gora and Strandja, Kraishte and Central Stara Planina. The objective of this paper is to present a review of the environmental impact of mining operations in the region of Sashtinska Sredna Gora and Central Stara Planina, with a particular focus on surface water pollution caused by heavy metals and metalloids.

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POLYCYCLIC AROMATIC HYDROCARBONS IN OILSEEDS, OILS AND DERIVED PROCESSED PRODUCTS – A REVIEW

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This paper presents a review regarding the content of polycyclic aromatic hydrocarbons (PAHs) in oilseeds, oils and derived processed products and the factors that influence their presence.
PAHs are a large group of toxic environmental and food-processing contaminants with two or more fused aromatic rings which present mutagenic, genotoxic and carcinogenic effects and can contaminate food by many paths. Their presence in foodstuffs is regulated by the Regulation (EU) No 835/2011 which sets the maximum levels in oils and fats intended for direct human consumption or used as an ingredient in food of 2 µg/kg for benzo(a)pyrene and 10 µg/kg for sum of 4 PAHs.
Different factors are correlated with the presence of PAHs in edible oils: environmental conditions and the seeds drying method, the stages of seeds processing to obtain the oil (crude oil extraction, refining and purification), oil storage (storage conditions) and how the oils are used (frying, baking).
Vegetable oils and fats are widely used in human consumption, thus the presence of these contaminants should be monitored as they represent a major source of dietary exposure to PAHs.

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AN OVEREVIEW ON LEGUMES AS NUTRITIVE SOURCE FOR HUMAN NUTRITION

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Among legumes, lentil, lupine, chickpea and soy represent important sources of nutrients for human consumption. Legume's consumption can lead to various health benefits, potentially reducing the risk of conditions such as type 2 diabetes, coronary diseases, and obesity. The Food and Agricultural Organization of the United Nations (FAO) is actively engaged in the diversification of protein sources, with a particular focus on these legumes due to their rich content of protein, fiber and minerals, which contribute significantly to their nutritional value. An in-depth examination reveals that lupine stands out for its high levels of protein (38.8-55.3%), fats (15.7-18.83%), fiber (14-55%) and starch (37-68%). Soy is recognized as a substantial source of protein (35-40.3%), while lentil is notable for its significant fiber content (5.1-26.6%). Additionally, lentils and chickpeas are characterized by low-fat content and varying fatty acid profiles. Moreover, vitamins together minerals are also present in significant quantities within legumes. Lupin is recognized for its high potassium content (1092 mg/100 g), while soy has higher levels for magnesium, manganese, calcium, phosphorus and iron. On the other hand, chickpea contains the highest amount of vitamin B2 (1.73 mg/100 g) compared to soy, lentil and lupin, while the amount of vitamin B1 is higher (0.847 mg/100 g) in soybean. Vitamin C varies between 1.5-6.5 mg/100 g. However, the presence of certain antinutritional components inherent in these legumes may hinder the absorption of specific nutrients. Accordingly, soaking, boiling or microwave cooking are used to reduce the level of these compounds in legumes. Despite potential challenges arising from antinutritional factors, legumes represent a healthy alternative for human nutrition, gaining popularity on a global scale.

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SINGLE AND COMBINED TOXICOLOGICAL EFFECTS OF VALPROIC ACID AND MEROPENEM TREATMENTS ON ZEBRAFISH BEHAVIOR

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Medicines are essential for human health, but when improperly disposed of or released through wastewater, they can contaminate the environment. This is concerning because wastewater treatment facilities cannot remove all medications. As a result, contaminated wastewater can enter rivers, lakes, and even drinking water supplies, raising concerns about water quality, the health of aquatic organisms, and the broader environment.
This study investigated the effects of two medications, valproic acid and meropenem, on zebrafish (*Danio rerio*). The findings revealed that fish treated with valproic acid explored their surroundings more but spent more time at the bottom of the aquarium, a behavior typically linked with fish stress.
In the sociability test, the treated groups were more exploratory, but social activity decreased with valproic acid treatment, whereas it increased with meropenem treatment and in mixtures. Notably, the

combination of valproic acid and meropenem had a greater impact on social interaction than either treatment alone, underscoring the potential for increased environmental risk when these medications coexist in water.

Overall, the study's findings suggest that medications in water can alter fish behavior, potentially affecting their survival. Anxiety-related behaviors and changes in swimming patterns may increase the vulnerability of fish to predators and reduce their ability to find food and mates. This highlights the importance of proper medication disposal and improved wastewater treatment to protect aquatic ecosystems.

BIOMASS GASIFICATION FOR HYDROGEN PRODUCTION, AN OVERVIEW OF THE PROCESS USING VARIOUS RAW MATERIALS

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Climate change, environmental pollution, population growth and overwhelming amounts of waste have led to the need to identify alternative fuels to replace fossil fuels. The gasification process of biomass residues from agriculture and agro-industry represents a suitable source for energy recovery through the production of syngas, including H_2, CO and CH_4. The gasification processes are carried out at a temperature range between 500 °C and 1000 °C. Various types of gasifiers were examined, in fixed bed and fluidized bed, following the gasification process and the contribution of specific gasification agents. The oxidation agents used in the biomass gasification process are: air, CO_2, steam, O_2. The effect and type of catalysts used were followed from the perspective of the highest possible percentage of hydrogen. This report analyzed the production of syngas, especially hydrogen, through gasification by comparing and analyzing the results of various types of biomass and aimed to bring a globalist approach to the production of hydrogen-rich syngas based on current technologies.

Acknowledgments

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RESULTS REGARDING THE SEASONAL MONITORING OF *EPICOMENTIS HIRTA* PODA. (COLEOPTERA: SCARABAEIDAE) IN AN ARONIA PLANTATION FROM NORTH-EASTERN AREA OF ROMANIA

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The potential of colored traps in association with phagoattractants represents a new tool for the detection and seasonal monitoring of *Epicometis hirta* (Poda) adults found in fruit shrub plantations in the North-Eastern area of Romania. The experiment was carried out during 2022-2023 in a chokeberry plantation where the cultivars 'Nero' and 'Melrom' are grown.
During the study period adults emerged every year from the end of March. The first adults were captured before the flowering period, on 31st March 2022, respectively on 29th March 2023. The maximum flight was reached when both varieties were in the phenophase of full flowering, at the end of April (27.04.2022), the beginning of May (04.05.2023). The maximum number of adults captured was in the 'Nero' cultivar, in 2023, which produced 36.15% flower damage. The last adults were observed on May 12th (2022), respectively May 15th (2023).
The present work focuses on the results of monitoring the attack on the inflorescences of some cultivars of *Aronia melanocarpa* L. and on the detection of the presence of the polyphagous pest *Epicometis hirta* (Poda) in a chokeberry plantation from Iași county. The obtained results were processed and statistically interpreted.

IDENTIFICATION AND MONITORING OF CYDALIMA PERSPECTALIS (WALKER, 1859) IN THE PRODUCTION FIELDS OF AN ORNAMENTAL NURSERY FROM THE IASI AREA

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The box tree moth (*Cydalima perspectalis* Walker, 1859) is a harmful species native to subtropical regions of Asia. Its introduction into areas of America and Europe has led to it being classified as a biological invasion. This moth poses a significant threat to boxwood plants (*Buxus* spp.), as its larvae feed voraciously on the leaves and stems, causing defoliation and weakening of the plants.
This study was conducted during 2023 within an ornamental nursery located in the Iași County both in the greenhouse and the outdoor production fields of buxus. The aim of this paper focuses on the identification and monitoring of *Cydalima perspectalis* (Walker, 1859) using pheromonal traps placed between May-September. In the greenhouse, the first adult moths were identified on April 3rd. Subsequently, the monitoring efforts in the outdoor production fields revealed the flight activity of the overwintered generation adults from May 15th to June 21st, while the flight activity of the following generation adults occurred 28 days later, beginning with July 19th and until August 24th.
The results obtained were processed and interpreted statistically and will constitute preliminary aspects in the control strategies of *Cydalima perspectalis* (Walker, 1859) substantiated and adapted to the zonal ecosystem.

THE PROCESS OF PHOTOSYNTHESIS AND THE LIGHT REGIME OF SOME SWEET CHERRY CULTIVARS FROM THE NORTH-EAST OF ROMANIA

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Sweet cherry has the highest intensity of photosynthesis among all stone fruit crops, thus, studies on the physiological processes of using lighting resources and improving photosynthetic activity provide a theoretical basis for increasing and stabilizing fruit production. The purpose of the present study was to evaluate the photosynthesis process by determining the amount of active photosynthetic pigments and the stomatal conductance at the leaf level, under the aspect of the light intensity at the tree canopy level. The research was carried out over two years (2022-2023) on three sweet cherry cultivars ('Van', 'Andreiaș' and 'Margonia'), in three distinct phenological stages, according to the BBCH scale (65-full flowering, 75-fruit growth and 89-fruit ripening), with samples taken from two areas of the tree canopy: the external, peripheral part and the internal part, close to the trunk. The obtained results revealed a higher content of chlorophyll a in the internal part of the canopy and during the observed phenophases, the total content of chlorophyll pigments (chlorophyll a and b) increased from 11.06 mg/100g F.W in the flowering stage and 12.96 mg/100g F.W in the fruit growth stage, up to maximum values of 25.84 mg/100g F.W at fruit ripening. The stomatal conductance had average values between 7.13 and 10.4 mmol/m²/s and in correlation with the light intensity, significant correlation coefficients (R^2) were obtained: 0.984 at 'Van', 0.978 at 'Andreiaș' and 0.928 at 'Margonia' cultivar. The

intensity of the physiological processes varied depending on the light intensity, climatic conditions, cultivar and canopy area.

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CALENDULA OFFICINALIS – OVERVIEW ON APPLICATIONS AND PHARMACEUTICAL USES

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Calendula officinalis, commonly named marigold, is a vibrant, adaptable, and versatile herbaceous plant esteemed across centuries for its decorative, culinary, and medicinal effects. It has long been known for its content of bioactive compounds, including flavonoids, carotenoids, and triterpenoids, which provide numerous health advantages, such as antibacterial, antioxidant, skincare, wound healing, and anti-inflammatory properties, and even on cancer treatment. We developed this study to describe *Calendula officinalis* history, botanical characteristics, pharmacological properties, toxicity, and modern-day applications. *Calendula officinalis* emerges as a remarkable representative among botanical species, that not only embellishes our gardens, but also contributes profoundly to our well-being and health in diverse ways. *Calendula*'s edible flowers add a burst of colour and flavour in culinary dishes and infusing. Through its multifaceted potential for various purposes and pharmacological properties, this plant has demonstrated a promising capacity in various fields including pharmaceuticals, food, textiles, cosmetics, and agrochemicals.

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QUANTITATIVE DATA REGARDING INVASIVE PLANT SPECIES FROM HABITATS OF EUROPEAN INTEREST IN THE PESCEANA RIVER BASIN, VÂLCEA COUNTY

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Invasive allochtone species cause the degradation of the natural habitats they invade through the negative impact they have on native plant communities, which they tend to alter, even replace, through their increased competitiveness and their high potential for reproduction and spread.
The main objective of the study was to identify and evaluate the spread potential of allochtone invasive species observed in some habitats of European interest in the Pesceana river basin (Vâlcea county), starting from the quantitative evaluation of their populations within the plant associations specific to different types of habitats. The assessment of invasive species was carried out by determining the number of individuals and assessing the percentage abundance-dominance of these species in relation to the total abundance-dominance of the species in the plant associations specific to the different types of analyzed habitats.
Observations were carried out in the following types of habitats affected by different allochtone invasive plants: habitat 91M0; habitat 9130; habitat 91Y0; habitat 9170; priority habitat 91E0*; habitat 6430 and habitat 3150. The primary factor that significantly contributed to the introduction and rapid spread of these plant species in the analyzed habitats was zoo-anthropogenic.

Among the invasive plant species that affect the floristic composition of the plant associations in the assessed habitats, the most frequent: *Erigeron canadensis, Ambrosia artemisiifolia, Robinia pseudoacacia*, *Erigeron annuus* subsp. *strigosus, Xanthium orientale* subsp. *italicum*, *Elodea nuttallii* and *Ailanthus altissima*, all being classified as neophytes.

Interpretation of the field date showed that the most affected types of habitats are 91E0* and 6430 and the most affected plant associations, depending on the share of invasive plant species, are *Aegopodio podagrariae-Alnetum glutinosae* Karpati et Jurko 1964, respectively *Scirpetum sylvatici* Ralski 1931 em. Schweich. In the case of the association *Aegopodio podagrariae-Alnetum glutinosae* Karpati et Jurko 1964, the percentage values of the abundance-dominance of the invasive species are very high compared to the value of the total abundance-dominance of the component species, which denotes a high degree of damage and the high potential of dissemination to the associations adjoining plants and to other similar types of habitats.

ECO-FRIENDLY AND BIOLOGICAL MEANS TO REDUCE PHYTOPATOGENIC AND COLIFORM CONTAMINANTS ON STRAWBERRIES

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Strawberries are sensitive to pathogens attack. Therefore, they require specific phytosanitary control measures. Antagonistic microorganisms, such as the biological control agents, have been suggested as an alternative method to prevent various infections. The aim of this work was to select beneficial yeasts and bacterial strains with inhibitory potential against the phytopathogenic fungus *Botrytis cinerea*, that causes gray mold. Certain *in vitro* tests were performed to identify the biocontrol mechanisms of action. Moreover, the presence of coliform bacteria was also evaluated on the strawberry fruits grown in organic system. Two yeast strains, *Saccharomyces cerevisiae* L30b and *Metschnikowia pulcherrima* sa5, and other six bacterial strains, *Bacillus subtilis* A4, *Pseudomonas chlororaphis* RG, *P. fluorescens* Rcp2, R2.1d and 79.3 and *Serratia plymuthica* Ps33, were tested *in vitro* for the production of diffusible and volatile compounds with antifungal effect. The results highlighted *Pseudomonas fluorescens* R2.1d strain which had the best efficacy on inhibiting the pathogenic mycelium growth. This strain released both diffusible and volatile antagonistic compounds against gray mold caused by *B. cinerea*, with as efficacy of 68.9% and 88.9%, respectively. The strawberries surface microbiota was evaluated on fruits collected from an ecological production system, having different technological option as experimental variants. The lowest

microbial load of coliform bacilli was shown on the strawberry fruits collected from the matted row variant, covered with black foil mulch, compared to the other technological option of the ecological production system.

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ENTRAPMENT OF PHYTOCOMPOUNDS FROM ARMORACIA RUSTICANA LEAVES INTO LIPID VESICLES AS A STRATEGY TO ENHANCE THEIR DELIVERY

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This research paper investigates the entrapment of phytocompounds extracted from *Armoracia rusticana* leaves into lipid vesicles as a strategic approach to enhance their delivery. *A. rusticana* (horseradish), a perennial plant rich in phenolic compounds, vitamins, minerals, and essential oils, exhibits antioxidant, antimicrobial, and anti-inflammatory effects [1, 2]. The horseradish leaves extract underwent comprehensive characterization utilizing the Folin–Ciocalteu method, HPLC, MTS assay, and DPPH assay unveiled a total polyphenol content of 21.76±0.01 mg GAE/g dry material, the presence of acid trans-ferulic, acid p-coumaric, and kaempferol, no cytotoxic effect, and significant antiradical activity. Lipid vesicles containing *A. rusticana* leaves extract were prepared using the thin-film hydration method combined with sonication and extrudation. The lipid vesicles containing *A. rusticana* were thoroughly characterized for entrapment efficiency, particle size, polydispersity index, and stability. The lipid vesicles loaded with *A. rusticana* exhibited excellent entrapment efficiency, with nano-sizes below 150 nm, narrow polydispersity index, and maintained stability for 90 days. Additionally, pretreatment with different concentrations of free and loaded extract (5, 10, 25 µg/mL) for 24 hours effectively protected L-929 cells against H2O2-induced cytotoxicity. These findings showed the potential of horseradish leaves as dietary supplements due to their antioxidant properties and cytoprotective effects against oxidative stress-induced cytotoxicity.

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ASSESSMENT OF THE POPULATION DENSITY OF *GALBA TRUNCATULA* (MÜLLER, 1774) IN HABITATS OF TELEORMAN COUNTY, ROMANIA

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Galba truncatula is a widespread gastropod, showing great adaptability and the ability to populate different types of habitats. The aim of this study was to identify habitats populated by G. tuncatula in two localities in the South of Teleorman County where ruminants are raised, as well as to establish the density of this gastropod in the identified habitats. Two areas were randomly established in each locality, of 10 m^2 each, from where specimens of G. truncatula were collected. The density estimation was performed using the method of counting the number of snails in an area of 1 m^2 in a unit of time. A number of 1761 specimens were collected from the 4 assessed habitats, and the density of snails varied from 20 to 71 specimens/m^2. Of all the examined quadrats, 60% recorded a density >40 specimens/m^2. No quadrat was recorded with a density <10 specimens/m^2, which proves that the evaluated habitats present optimal conditions for the development of the G. truncatula population.

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STUDY ON ALPHA AND BETA GLOBAL RADIOACTIVITY OF SAMPLES OF BOTTLED MINERAL WATERS IN ROMANIA

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Measurement of gross alpha and beta radioactivity in drinking water is an important screening method for assessing radiological water quality. In recent years, the trend of using bottled water has expanded significantly, therefore monitorization of the level of radioactivity has become essential. The present study aimed to evaluate the total radioactivity of bottled mineral water samples from different regions of Transylvania, Romania over a 6 year-period (2017-2022). The obtained results indicate concentrations of gross alpha and beta activities ranging from 0.0057 to 0.0801 Bq/L with a mean value of 0.0383 Bq/L for gross alpha activity, and between 0.0929 Bq/L and 0.7953 Bq/L with a mean value of 0.4415 Bq/L for gross beta activity. The radioactivity values of bottled mineral waters were situated within the permitted levels regulated by WHO, with reference values of 0.5 Bq/L for gross alpha activity and 1 Bq/L for gross beta activity, respectively. The obtained values were also within the limits recommended by the Council Directive 2013/51/ EURATOM, of 0.1 Bq/L for gross alpha activity and 1 Bq/l for gross beta activity, respectively. According to the results of this study, the investigated bottled mineral waters can be considered radiologically safe for consumption.

GERMINATION OF SUNFLOWER SEEDS UNDER THE INFLUENCE OF CHEMICALS

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Food dyes are natural or artificial (synthetic) substances intended to provide, enhance, or restore the colour of food products. Color Index (C.I.) is used to identify dyes. In this reference, each dye of a certain chemical structure is assigned a five-digit number, and its various names are given. To harmonize the use of food additives, the European Council has developed a rational system of digital codification of food additives, where all dyes are indicated. A WHO codex for food products (Codex Alimentarius, Ed. 2, Vol. I) outlines the international digital system of codifying food additives (International Numbering System - INS). Food dyes in this system are assigned three-digit INS/E indices starting with 1. Natural, inorganic (mineral) and synthetic (organic) food dyes are distinguished. In addition, dyes identical to natural ones are isolated. In the last century, most countries have already passed laws on the conditions for using food dyes and approved lists of colourants allowed for use. However, uniform requirements for assessing the safety of food dyes have not yet been developed. Therefore, some dyes are allowed in certain countries, while others are prohibited. Synthetic food dyes have become widespread, but the question of the safety of their use attracts the attention of scientists, namely the possible presence of mutagenic, carcinogenic and toxic effects due to their artificial origin. Studies on the effects of synthetic food dyes are conducted sporadically. Therefore, the study of the impact of synthetic dyes on living organisms and controlling their content in food products are very important and urgent tasks.

In our study, we examined the impact of three dye solutions (E122 (red), E102 (yellow), and E133 (blue)) on the germination of sunflower seeds. We prepared four different dye solutions: the first

was at the concentration recommended by the manufacturer, the second was a 1:1 dilution with water, the third was a 1:2 dye-to-water ratio, and the fourth was a 1:4 dye-to-water ratio.

It turned out that the solution of all three dyes in the concentration recommended by the manufacturer completely killed the seeds - not a single seed germinated in the dye solutions. A 1:1 dilution of dyes E122 and E133 allowed 27% of seeds to germinate, and dye E102 showed a slightly better result - 30% of seeds germinated. A 1:2 dilution of the E122 dye allowed 73% of the seeds to germinate; the E102 dye showed a worse germination result - 70%, and the E133 dye inhibited germination the most - only 67% of the germinated seeds. At the same time, dilution of dyes in the ratio of 1:4 allowed germination of almost all seeds: E122 – 90% of germinated seeds, E102 – 93%, E133 – 87% of germinated seeds.

Thus, the following conclusions can be drawn:

Our study's findings on the effects of food dyes E122, E102, and E133 on seed germination are significant. High concentrations of these dyes inhibit seed germination, with a 1:4 dilution proving the safest against the manufacturer's recommended concentration. Regarding the dyes themselves, E133 (blue) had the most inhibitory effect on seed germination, while E102 (yellow) appeared the safest.

PECULIARITIES OF LEAF PUBESCENCE OF WILD SUNFLOWER SPECIES

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Sunflower is the main oil crop of Ukraine. The southwestern part of North America is considered the birthplace of the sunflower. This is indicated by the wide variety of wild species of the Helianthus family distributed here, which are practically not found in other places. North American wild species of sunflower are always herbaceous and primarily perennial. Their special features are the absence of a central basket and strong branching. The stem is usually very rough, densely pubescent, with stiff hairs sitting on small protrusions, and mottled with anthocyanin. There are forms without anthocyanin. Plant trichomes are epidermal protrusions of variable shape, cytology, and function. Researchers have described more than 300 different types of plant trichomes. They are located on different surfaces of almost all angiosperms. They can change the surface layer of the leaf, contribute to light transmission, protect against temperature stress, and reduce water loss during transpiration.

We studied the morphology of aerial organs of 6 species of perennial sunflowers*: Helianthus mollis, Helianthus tuberosus, Helianthus maximilianii, Helianthus nuttallii, Helianthus salicifolius, Helianthus rigidus.* To study the anatomical structure of vegetative organs, temporary preparations were made from living material. The results are shown in Table 1.

Table 1 – The number of hairs on the leaf surface

Species	The number of hairs on the top epidermis	The number of hairs on the lower epidermis
H. mollis	88,4±1,40	too much
H.tuberosus	20,2±0,66	16,4±0,06
H. maximilianii	21,0±0,68	26,2±0,76
H. nuttallii	9,8±0,04	28,1±0, 80
H. salicifolius	3,4±0,21	5,6±0,32
H.rigidus	40,4±0,09	48,4±1,12

In field conditions, all species showed high resistance to prolonged high temperatures. When comparing the number of hairs on the leaf blade of the most heat-resistant species, *N. rigidus* and *N. nuttallii*, a significant difference in their number can be noted. However, *N. salicifolius* is the most resistant to the effects of high temperatures, and the number of hairs on 1 mm of the leaf blade area is almost three times less than that of *N. nuttallii*. Most likely, its heat resistance is provided by other mechanisms.

Thus, we can see that all wild perennial species have many hairs, which are mainly located on the lower side of the leaf (on the lower epidermis), except *Helianthus tuberosus*, which has more hairs on the upper epidermis. The most pubescent were *Helianthus mollis*, and the least was *Helianthus salicifolius*.

RESEARCH ON CARABID SPECIES IN SOME WHEAT CROPS, DEPENDING ON THE APPLIED TECHNOLOGY

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The observations were made in 2022 on a wheat crop in two experimental variants, depending on the treatment scheme applied. In variant 1, number of treatments were applied to combat pathogens and pests in wheat cultivation in an ecological system, and in variant 2, where wheat was grown in a conventional system, were applied the treatments of against pathogens and pests. For the collection of the carabid species were used, the Barber traps -type ground, which worked from May to July. In both experimental stationary, were made six harvests on the following dates: 15.05; 26.05; 12.06; 26.06; 10.07; and 24.04. Regarding the results obtained in first variant 1, were collected 263 specimens and 140 specimens in second variant. In variant number 1, were collected a total of 26 species, and in variant number2, only 5 species were collected. The species with the highest number of specimens in the two variants *were Pterostichus cylindricus*, *Pseudophonus pubescens*, and *Harpalus distinguendus.*

RESEARCH ON THE SPECIES OF CARABIDS EXISTING IN SUNFLOWER CULTURE, DEPENDING ON THE APPLIED TECHNOLOGY

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The observations were made in a sunflower crop in the north-western extremity of Arad county, in the immediate vicinity of the town Adea, using two variants:
Variant 1 (V1), where there were no treatments for the chemical control of the pathogenic agents of the pests.
Variant 2 (V2), where chemical treatments were made to the seeds and during the vegetation period against pathogens and pests.
In the ecological variant, a larger number of specimens and species were collected in each of the 10 collections compared to the conventional variant, where chemical treatments were carried out to combat pathogens and pests. The most frequently collected carabid species were *Pterostichus cylindricus, Pseudophonus pubescens*, and *Pseudophonus griseus*, in both variants. In total, 501 carabid specimens belonging to 16 species were collected in the ecological variant, and 243 specimens belonging to a total of 10 species were collected in the conventional variant.

CONSERVATION CONSIDERATIONS REGARDING FOREST HABITATS OF THE NATURA 2000 SITE PRIGORIA-BENGEȘTI

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The paper presents the results of the studies performed in the Natura 2000 site ROSCI0359 Prigoria-Bengești (Gorj County, Romania), a natural protected area designated for the conservation of six type of community/national interest forest habitats: 9110 Luzulo-Fagetum beech forests, 9130 Asperulo-Fagetum beech forests, 9170 Galio-Carpinetum oak-hornbeam forests, 91E0* Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae), 91M0 Pannonian-Balkanic turkey oak-sessile oak forests and 91Y0 Dacian oak-hornbeam forests. In order to maintain the forest habitats in a favourable state of conservation, the aim of the study was to identify, map the distribution areas, evaluation of the conservation status and identification of current and potential threats. In this regard, the modelling of the field data allowed the realization of a comprehensive habitat analysis which can be used as an important tool in the managing the heritage of the protected area.

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OBSERVATIONS ON THE INVERTEBRATE FAUNA FROM SOME LAVENDER (*LAVANDULA SP.*) CROPS IN 2023

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The observations were made in a lavender culture located in NE Moldova, Romania. In the characterization of the climate in the area of NE Moldova, we rely on the long-term meteorological observations from the Plant Protection Center, supplemented with the data recorded at the farm in which the observations are carried out.
To collect the material, were used two types of traps, namely: sticky chromatic traps, and the second one represented by the use of Barber type traps starting from May, until August inclusive.
The analysis of the collected material shows that the collected specimens belong to the Class Hexapoda, with several orders of insects and the Class Arachnida, the order Aranea and the order Acari. But most of them belong to the class Insecta. The orders to which the collected species belong are: Coleoptera, Heteroptera, Hymenoptera, Diptera, Neuroptera, Homoptera, all from the Hexapoda class.
The purpose of the research that was carried out was to determine with as much precision as possible the pests that affect or can affect the lavender crops in the NE part of Moldova, as well as the knowledge of the useful fauna or the possibilities of protecting it.

RESEARCH ON THE INVERTEBRATE FAUNA OF SOME GOJI (*LYCIUM BARBARUM*) PLANTATIONS IN THE 2023 AND THE CALCULATION OF THE ALPHA BIODIVERSITY INDICES

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The research carried out in the Aroneanu stationary, in 2023, in Iasi County, followed the appearance, abundance and dynamics of the existing invertebrate species in the goji culture, with a special reference to the most important and widespread pests identified during the studied period.
With the help of Barber traps, individuals of different species can be continuously collected, regardless of the biotope. After collecting and identifying the species, it is possible to assess the specific composition of the biocenosis, the seasonal variation and their cenotic preferences.
Sticky traps can be used both for monitoring pests and for their actual control. The use of this method of pests control and monitoring comes with certain advantages, they are ecological; they are easy to mount and use; does not leave residues or residues in the crop or on the fruit; reduce the number of treatments with insecticides; etc.
The purpose of the research was carried out to determine as precisely as possible the pests that affect or can affect the goji crops in the NE part of Moldova, as well as the calculation of alpha biodiversity, in order to compare the biodiversity of different geographical regions or biological communities.

PSYCHOLOGICAL TRAITS AND RISK FACTORS IN PEOPLE DIAGNOSED WITH CANCER

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The main goal of the present study was to identify a number of psychological traits, lifestyle and environmental factors that might be implicated in the aetiology of cancer. We used a sample of 148 Romanian people with or without the diagnosis. We have built a 92 items questionnaire by combining standardized psychological questionnaires with various questions regarding the risk factors. Our study results have confirmed, once again, than smoking, consumption of alcohol and being overweight are risk factors for cancer ($p<.05$). Regarding the environmental factors, our study concluded, in accordance to epidemiological literature, that exposure to ionizing and non-ionizing radiation could contribute to the disease ($p<.05$). Regarding the psychological factors, the between-group comparison has not shown any association to the diagnosis. But when we accounted for other chronic disease by eliminating those sufferers from our sample, the diagnosis was associated with emotional repression and childhood trauma, suggesting they may predispose for cancer and also for other diseases ($p<.05$). We recommend better prevention policies and awareness campaigns regarding these risk factors.

LONELINESS, ATTACHMENT, AND SUBJECTIVE WELL-BEING IN PERSONS WITH ALZHEIMER'S DEMENTIA

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Alzheimer's dementia is still a mysterious disorder associated with great distress in the person herself, but also for those around her. In our study we compared participants with normal functioning, with persons considerer predisposed to developing Alzheimer's dementia, according to the MMSE scores doctor's assessment, and with a third group of persons already diagnosed with Alzheimer's dementia, using psychometric instrument assessing subjective satisfaction in life, negative emotions and mood, feelings of loneliness, and characteristics of secure, avoidant, and ambivalent attachment. The results showed that both groups, those predisposed and already diagnosed with dementia, had a significantly lower satisfaction with life in general, negative functional emotions (fear/anxiety and sadness), negative mood or dysfunctional emotional states (anxiety or depression), felt significantly lonelier, exhibited higher characteristics of ambivalent attachment. The differences for features of secure and avoidant attachment were not significant enough for the participants in the study. The results argue in favour of considering characteristics of interpersonal relationships, especially ambivalent ones, and feelings of loneliness, associated also with higher depression and anxiety, as accompanying the disorder even from the early stages of the cognitive decline, suggesting possible psychological prevention strategies.

DEPRESSION, ANXIETY AN ONLINE COMMUNICATION

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Online communication has been changing the way people relate to each other, its benefits being the major highlights (like the ability to rapidly communicate multiple persons, to share complex material and even for psychotherapeutic, medical, and educational purposes, with the possibility to reduce overall pollution). the purpose of our research was to investigate the associations of online communication with two significant dimensions of personal wellbeing: depression and anxiety. We used The Problematic Internet Use Questionnaire, the Social Media Use Questionnaire, The Beck Depression Inventory, the Profile of Affective Distress, on a sample of 100 participants. The problematic use of internet, withdrawal, and the addiction to social media were positively associated with functional sadness, depression, and dysfunctional anxiety, while only the problematic use of internet and addiction to social media were also associated with positive emotions. The conclusions are important for taking in consideration the preferred mode of communication of those experiencing anxiety or depression, and the way online communication relates to subjective well-being.

PROSOCIALNESS AND SOLITUDE

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The current study investigates the relashionship between prosocialness and solitudine with a particular focus on the negative and positive sides of solitude. Prosocialness and solitude are seen as essential elements in
the dynamic process of individual self-regulation process that integrates the need to belong and the necessity to renew or to conserve energy for future pro social interactions. The main purposes were: 1.to test the correlation between prosocialness and solitude; 2. to design and to implement a creative meditation group metaphor (the magic garden) to increase the prosocialness dimension and to attenuate the negative experiences of solitude. Multiple methods were used in this study: an experimental design, observation, psychodiagnostic instruments, and statistical methods (Correlation and Paired-Samples T Test). Results suggest that if someone prefers to involve in proactive actions such as sharing, helping, taking care of, feeling emphatic with others, it is more likely to prefer less time spent in solitude. The creative meditation group metaphor enhanced feelings of connection and allowed the participants to explore the self-transformative and restorative effects of solitude (the positive side of solitude) in the form of self-reflection, creative insights and relaxation. It is the balance between prosocialness and solitude that can better support and contribute to a healthy and meaningful life.

THE IMPACT OF UAV TECHNOLOGY IN AGRICULTURAL MONITORING

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Abstract: This paper aims to investigate the usage and impact of Unmanned Aerial Vehicles (UAVs), also known as drones, in agricultural land monitoring. The main objective of this research is to thoroughly examine the use of UAVs in agriculture, focusing on obtaining precise and up-to-date information about land conditions to support decision-making processes and implement sustainable management strategies. The contributions of this study include the identification of the advantages and limitations of UAV in monitoring and protecting agricultural land, as well as exploring how these technologies can optimize agricultural processes and support informed decision-making. The paper also addresses current challenges facing agricultural lands, such as soil degradation, crop loss, and climate change pressure, emphasizing the importance of precise monitoring and adequate protection for sustainable agriculture.
Throughout history, the evolution of drones has been analyzed, from early prototypes to modern models, highlighting the technological advancements that have led to the popularization of UAVs in agriculture. Presently, the use of UAVs in agriculture has become increasingly popular due to their ability to collect detailed data and provide relevant information in real-time, thereby contributing to increased efficiency and sustainability in agriculture. In the future, it is anticipated that UAV technology will become increasingly sophisticated and integrated into agricultural activities, contributing to the transformation of this sector and generating increased interest among younger generations of farmers and agricultural researchers.

The method used involved a review of specialized literature to assess the impact of this technology at the national level and the execution a drone flight using specific software to collect relevant data for monitoring agricultural land. Detailed mission planning was conducted beforehand, and during the flight, various techniques and strategies were applied for land mapping and data collection. The system also provided real-time information about weather conditions and air traffic, contributing to efficient operations management and ensuring safe flight. The results obtained consisted of precise and detailed data about the monitored land, which were subsequently analyzed and interpreted to identify potential threats or issues. The images processing included their transformation into 3D and 2D maps, as well as generating NDVI maps to assess the vegetation status of the land. These data allow the identification and evaluation of various aspects of agricultural land, including pest-related problems, nutrient deficiencies, or water stress, thereby contributing to informed decision-making and optimized crop management. The paper highlights the importance of UAV technology and demonstrates its potential in increasing efficiency and sustainability in agriculture. By integrating UAVs into agricultural workflows and using them in data collection and analysis, it is possible to more efficiently identify and manage the challenges and risks associated with agricultural activities, thereby contributing to the development of smarter and more sustainable agriculture.

THE IMPORTANCE OF BIOLOGICAL CONTROL IN THE PROTECTION OF VEGETABLE CROPS

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The concept of ecological agriculture is a key component of sustainable agriculture, where the use of natural biocidal substances is recommended alongside other non-polluting conventional cultural practices. Pesticides have been the most effective method of controlling mycotic pathogens in tomato crops in greenhouses and protected spaces. The use of natural compounds for the control of pathogens is very attractive and represents a new approach in the field of plant protection. The results of the experiments indicated a positive effect of plant extracts, especially sage, on the growth of the two pathogens. Even at low concentration values, the fungistatic effect was strong due to the high content of secondary metabolites (polyphenols and catechin). The antagonistic potential of plant extracts is of interest to be used at large scale in farm operations as these are cheaper than chemicals and generally do not cause environmental pollution or health hazards in man and animals.

CURRENT CONCERNS IN SILVER NANOPARTICLES TOXICITY TESTING

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Nanotechnology is currently involved in numerous fields of major importance, including medical, agricultural, and energy fields. The potential applications of nanoparticles, generated by their particular properties, have explosively developed this field, so that thousands of articles are published annually in various international databases. Thus, the search in the Web of Sciences, after the keywords silver nanoparticles, generates 114 711 publications for the period 1990-2024, with a maximum of 10 158 publications in 2022 (Web of Sciences, accessed on 02.05.2024). Any application of silver nanoparticles must be safe for life and the environment; therefore, testing the influence of silver nanoparticles on organisms is one of the major themes addressed in recent research at the international level. Seed germination, growth of axial plant organs, their fresh and dry weight, and the content of assimilatory pigments, polyphenols, proline, etc. constitute the parameters investigated and to be investigated in relation to the phytotoxicity of nanomaterials and nanoformulations, including silver nanoparticles. The changes at the cellular level, cell viability and the toxic effects of silver nanoparticles against the genetic material are also within the scope of current concerns related to their safe use. Research carried out in this field sometimes shows contradictory results; therefore, any new nano - ″product″ must be well characterized from the point of view of toxicity.

CYTOTOXIC EFFECTS OF *RANUNCULACEAE* EXTRACTS AND THEIR NANOSTRUCTURED MIXTURES

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The Ranunculaceae family includes about 60 genera and 2200 species of herbs, small shrubs or woody vines, worldwide distributed, and commonly found in the temperate regions of the northern hemisphere. Ranunculaceae species are notable for their varied chemical composition including different alkaloids, terpenoids, saponins, and polysaccharides, with important bioactivities and therapeutic effects, such as antibacterial, analgesic, anti-inflammatory, antidepressant, anticancer etc. A multitude of studies of *in vivo* or *in vitro* cytotoxicity, drug metabolism and pharmacokinetics, highlight the clinical relevance of the genera *Nigella*, *Delphinium*, *Aconitum*, *Helleborus*, *Anemone*, *Trollius*, *Clematis* etc. Ranunculaceae extracts or isolated phytometabolites have demonstrated their anti-cancer potential by enhancing immune activity, inhibiting proliferation, to induce cell apoptosis or to reverse drug resistance of cancer cells. At the same time, nanotechnologies play a major role in the discovery of new antitumor agents. The functionalization of nanoparticles and the development of nanomedicine delivery systems with high targeting capacity constitute the top challenge of research in the field. Using Ranunculaceae extracts, metallic or metal oxides nanoparticles with important antibacterial, antioxidant, anti-inflammatory and anti-cancer activity were biogenically synthesized.

RESULTS ON THE VARIABILITY AND CHARACTERIZATION OF THE FLOWERING PERIOD AT THE WALNUT GENOTYPES FROM THE RIFG PITESTI COLLECTION

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At the walnut, the flowering period is variable depending on the variety. The flowering of female and male flowers on the same tree is offered over time, which favors dichogamy. In this paper, 45 walnut genotypes, with different origins, from germplasm fund of RIFG Pitesti, Romania were evaluated, regarding flowering period. The results showed that, out of a total of 45 genotypes studied, 29 are protandrous (64.4%), 12 are protoginous (26.6%) and 4 are homogames (9%). Regarding the flowering time, in the climatic conditions from RIFG Pitești, in the spring of 2023, at the walnut varieties studied, on average the beginning of flowering of the male flowers took place between the third decade of April and the first decade of May, in time what the beginning of the flowering of female flowers took place in about the same period, but a few days later. Thus, were noticed by early to middle flowering, varieties such as 'Şuşiţa', 'Peştişani', 'Novaci', 'Recea', 'Secular', 'Schinoasa', 'Victoria', 'Vlădești', and by medium to late flowering, varieties such as 'Argeşan', 'Ciprian Ion', 'Geoagiu 265', 'Jupânești', 'Mihaela', 'Roxana', 'Sarmis', 'Sibişel 44', 'Velniţa', 'Orastie'. Also the foreign varieties ('Hartley' and 'Tehama') have noticed by late flowering.

RESULTS REGARDING THE BEHAVIOR OF SOME APPLE CULTIVARS TO DISEASES AND PESTS IN SUSTAINABLE CULTURE

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This work present the behaviour to diseases and pests of 12 apple cultivars with different origin (‘Aura’, ‘Rumina’, ‘Jonaprim’, ‘Rustic’, ‘Rebra’, ‘Redix’, ‘Orion’, ‘Luna’, ‘Rubinola’, ‘Topaz’, ‘Goldrus’h and ‘Crimson Crisp’), located in a field trial of RIFG Pitești, Romania, managed in ecological system. In 2023 observations regarding the behaviour of these cultivars at the fire blight and the codling moth were made. In order to prevent bacterial infections, in the ecological variants the product Blossom Protect (2 applications during the flowering period) was used. Observations regarding the attack caused by Erwinia amylovora, were made on short fruit formations (100 leaves) and on shoots (50). The results were expressed as a percentage as a frequency of the attack. Of the 12 cultivars studied, the ‘Topaz’ cv. proved to be the most sensitive, the frequency of attack in the lot treated with Blossom Protect being 8.25% on fruit formations and 0.08% on shoots, much smaller compared to the group standard (F=20.55% on fruit formations, 0.24% on shoots). For the monitoring of the pest Cydia pomonella, AtraPom pheromone traps were used. The frequency of the attack was between 0.0-0.4% depending on the cultivar, compared to the untreated variant where the frequency was 20.2%.

CHLORELLA PAST, PRESENT, FUTURE

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Even if they are tiny, microalgae play a vital role in the food chain and in global cycles. The small dimensions and simple structure of these prokaryotic or eukaryotic microorganisms ensure a high growth rate and the capacity to adapt to variable conditions. *Chlorella* is a genus of green algae that includes mainly freshwater species, but there are also species that can grow on soil or in marine water. From its discovery (1890 - Beijerinck) until today *Chlorella* has been the main subject of many researchers' studies. Most people think of *Chlorella* when they talk about proteins, not knowing that this spherical to ovoid microalgae has a particular importance in different applications. Its easy and fast cultivation, high biomass but also the capacity to accumulate biologically active compounds make it suitable for various domains: cosmetics, biofuel, food, pharmaceutical, wastewater treatment, aquaculture, agriculture, and industry (biopolymers, fuel cells, and photovoltaic technologies). Furthermore, *Chlorella* have potential for greenhouse gas biomodulation, which is an important factor in climate change. With a growing global population and with it the demand for resources and level of pollution, *Chlorella* represents a sustainable and environmentally friendly solution for the future.

IS GLOBAL WARMING OUR CONCERN OR NOT?

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Global warming and climate change represent current topics that are approached in many articles, conferences, agreements, etc. Even though the terms ”global warming” and ”climate change” are sometimes used as synonyms, global warming refers to the long-term warming of the planet and represents only one aspect of climate change. The extreme weather - heat waves, storms, droughts, and floods - that was observed in the last period all over the world is considered to be the result of climate change. The opinions regarding this subject are different; therefore there appear to be arguments: some believe that global warming is a natural process while others think that it`s the result of human activity, especially the burning of fossil fuels, which led to CO_2 incresead concentration. Each of them has their own perspectives and motivations and attempts convincing public opinion through mass media and social media platforms. Contradiction itself is the main "tool of human evolution", so this dispute should be seen as a step forward in discovering in detail what changes our planet is undergoing.

CIMEX LECTULARIUS (HEMIPTERA: CIMICIDAE) – NEW REPORT IN PITEŞTI (ROMANIA)

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Cimex lectularius is an ectoparasitic species with a cosmopolitan distribution adapted to a temporarily obligate hematophagous lifestyle. The parasitism relationship between humans and the bed bug dates back to the period when primitive humans lived in caves together with bats, considered to be the primary host. While a common presence throughout the world until the beginning of the 1950s, the bed bug has no longer been reported in the following decades as a result of its populations being managed with DDT, Romania becoming the largest producer of this insecticide at the European level. If the first reports regarding the recent return of the species in Europe date back to the end of the 90s, in Romania, the reports are more recent. An analysis the YouTube platform regarding bed bug control techniques in our country revealed the first record in 2013. Since four years ago, an increase in the number of sites dedicated to this topic indirectly reflected a larger number of cases of infestation, followed by an explosion of it in the last two years. Regarding the city of Pitesti, the species was reported for the first time in 2019, with an increase in the number of infestation cases in recent years. Although studies have not confirmed its role as a vector for human and animal pathogens, the bed bug is of medical importance since the bites cause allergies, dermatological, and psychological disorders. The increase of tourism and international trade, the main factors favouring the spread of the species, call for new measures necessary to prevent and control the spread of the bed bug, and ensure public health.

THE HEALTH STATUS OF *PHOXINUS PHOXINUS* IN THE FURU RIVER

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This study is dedicated to assessing the health status of the *Phoxinus phoxinus* species, commonly known as the minnow, in the Furu River, a watercourse located in the Vrancea mountains that contributes to the feeding of the Râmnicu Sărat River.
A detailed analysis was conducted on a sample of 334 individuals of *Phoxinus phoxinus*, collecting data on the weight and total length of each specimen.
The collected data were used to calculate the variation in weight and total length of the specimens studied, as well as the variation of the Fulton's condition factor, an indicator used to assess fish's nutritional and health status.
The analysis of these measure variations allowed the identification of significant trends regarding the health status of the minnow in its natural habitat. For instance, observations on weight and length variation can indicate the effects of environmental factors on fish growth and development, while variations in Fulton's condition factor may suggest changes in the availability of food resources that affect the population's health status.
The results obtained from this study provide a comprehensive overview of the health of the minnow in the Furu River, thus contributing to monitoring and managing this species. This information can be essential for developing effective environmental protection strategies and maintaining aquatic biodiversity in the region.