ABSTRACT BOOK

BALKAN 12. ULUSLARARASI UYGULAMALI BİLİMLER KONGRESİ

ÜSKÜP
1 - 3 Kasım 2024

BALKAN 12. ULUSLARARASI UYGULAMALI BİLİMLER KONGRESİ

BALKAN 12th INTERNATIONAL CONFERENCE ON APPLIED SCIENECES
NOVEMBER 1 - 3, 2024
SKOPJE

Published by Academy Global Publishing House

www.balkankongresi.org

BALKAN 12TH INTERNATIONAL CONFERENCE ON APPLIED SCIENCES
NOVEMBER 1 - 3, 2024 - SKOPJE

Edited By
PROF. DR. HÜLYA ÇİÇEK

CONFERENCE ID

BALKAN 12TH INTERNATIONAL CONFERENCE ON APPLIED SCIENCES

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Issued: 05.12.2024
ISBN: 978-625-6283-85-5

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GAZİANTEP ÜNİVERSİTESİ REKTÖRLÜĞÜ
Tıp Fakültesi

Sayı : E-98102723-903.07-475454
Konu : Görevlendirme Talebi

REKTÖRLÜK MAKAMINA

İlgi : 27.03.2024 tarihli ve E--903.07-474236 sayılı yazı

Fakültemiz Tıbbi Biyokimya Anabilim Dalı'nda görevli öğretim üyesi Prof. Dr. Hülya ÇİÇEK'in Yükseköğretim Genel Kurulunun 15.06.2023 tarihli, 10 sayılı oturumunda alınan 2023.10.183 sayılı kararı gereğince Doçentlik Başvuru Şartlarında bulunan ve doçent olacak adaylardan istenen "Diğer uluslararası/ ulusal bilimsel toplantının düzenleme komitesinde resmi olarak görevlendirilmiş üniversite akademisyen temsilcisi bulunması zorunludur." maddesi gereğince, Academy Global Conference & Journals tarafından yapılan kongrelerin düzenleme kurullarında yolluksuz ve yevmiyesiz olarak görevlendirilme talebi ile ilgili dilekçesi ekte gönderilmiştir

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Adres : Gaziantep Üniversitesi Kampus Alanı, Tıp Fakültesi Dekanlığı, Şehitkamil - 27310 - GAZİANTEP
Telefon : 0 (342) 360 60 60 Faks:0 (342) 360 16 17
e-Posta : tipfaksek@gmail.com Web : www.gantep.edu.tr/~tipdekanlik/bilgipaketi
Kep Adresi : gauntipdek@hs01.kep.tr

Bilgi için : Hüseyin Temel
Unvanı : Bilgisayar İşletmeni V.

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1 Kasım / November 1, 2024 / 11:00 – 13:00 Time zone in Turkey (GMT+3)

Salon	Moderator		Bildiri No ve Başlığı / Paper ID and Title	Authors
HALL / SALON 1	Dr. Öğretim Üyesi Hamide Merve GÜÇLÜ	1	A REVIEW AIMED AT DETERMINING THE DIFFICULTIES EXPERIENCED BY LOGISTICS ENTERPRISES IN THEIR GREEN PRACTICES	Doç. Dr., SALİH MEMİŞ Öğr. Gör. Dr., ZAFER CESUR
		2	THE DEVELOPMENT OF LOGISTICS VILLAGES IN TURKEY AND SAMPLE APPLICATIONS	Öğr. Gör. Dr., ZAFER CESUR Doç. Dr., SALİH MEMİŞ
		3	MÜŞTERİ ŞİKAYETLERİNİN YAPAY ZEKA TEMELLİ BİR UYGULAMA İLE DEĞERLENDİRİLMESİ: CHAT GPT ÖRNEĞİ	Öğr. Gör. Dr., ESRA TÜRK
		4	THE MEDIATING ROLE OF MATERIALISM IN THE RELATIONSHIP BETWEEN PERSONALITY TRAITS AND CONSPICUOUS CONSUMPTION	Esra KAHYA Asst. Prof. Bilal CELIK
		5	6331 SAYILI KANUN'UN 13. VE 25. MADDELERİNİN, UZAKTAN ÇALIŞMAYA UYGULANIP UYGULANAMAYACAĞININ DEĞERLENDİRİLMESİ	Dr. Öğretim Üyesi Hamide Merve GÜÇLÜ
		6	LOJİSTİK KÖYLERE AKADEMİK BAKIŞ	Prof. Dr. Burcu ERŞAHAN Prof. Dr. İsmail BAKAN Yüksek Lisans Öğrencisi Fatma Nur DEMİR
		7	THE NATURAL RESOURCE RACE IN TOURISM – THE CASE OF VIETNAM AND SINGAPORE	Nhu-Y Huynh PHAM Mong-Tuyen LUONG Thuy-Uyen Thi NGUYEN Yen-Vy Ha NGUYEN Anh-Thu Thi LE Lam-Thu VO Que-Nhu DUONG
		8	THE IMPACT OF LOCAL FOOD ON SUSTAINABLE DEVELOPMENT	Assist. Prof. Dr. Gizem Sultan KAMAN Assist. Prof. Dr. Rabia BÖLÜKBAŞ
		9	DIGITAL TRANSFORMATION AND REFLECTIONS ON INDEPENDENT AUDIT PROCESSES	Doç. Dr., Betül Şeyma ALKAN Merve YAVAŞ

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HALL / SALON 2	**Prof. Dr. Mesut Bulut**	1	EXAMINING THE PERCEPTIONS OF PROFESSIONALS WHO WILL WORK IN THE FORENSIC FIELD TOWARD CRIMINALS	Doç.Dr. Rumeysa AKGÜN Arş.Gör. Seda ERKUŞ DEMİR
		2	SINIF ÖĞRETMENLERİNİN ÖĞRETİM SÜREÇLERİNDE YARARLANABİLECEĞİ DİJİTAL ZEKÂ OYUNLARININ İNCELENMESİ	Öğretmen, GÖKÇEN BAHAR AYDIN Prof. Dr., BELGİN ARSLAN CANSEVER
		3	EXAMINING THE RELATIONSHIP BETWEEN MOTIVATION LEVELS AND INDEPENDENT LEARNING BEHAVIORS IN PRESCHOOL CHILDREN	Rukiye DIĞRAK Prof. Dr. Saide ÖZBEY
		4	TÜRK DİLİ VE EDEBİYATI ÖĞRETMENİ ADAYLARININ "DÜNYA EDEBİYATI" DERSİNE İLİŞKİN GÖRÜŞ VE DENEYİMLERİNİN İNCELENMESİ	Prof. Dr. Mesut Bulut
		5	EVALUATION OF STUDENT SUCCESS WITH MACHINE LEARNING CLASSIFIERS ON EDUCATIONAL SYNTHETIC DATA	Prof. Dr. Akın ÖZÇİFT Assoc. Prof. Dr. Fatih YÜCALAR

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HALL / SALON 3	**Dr. Öğr. Üyesi Hilal OK ERGÜN**	1	RELATIONSHIP BETWEEN GREEN FINANCE, HEALTH EXPENDITURES AND ENVIRONMENTAL QUALITY: THE CASE OF TÜRKİYE	Doç. Dr. Tolga ERGÜN Dr. Öğr. Üyesi Hilal OK ERGÜN
		2	THE RELATIONSHIP BETWEEN DISCONTENT INDEX AND CORRUPTION PERCEPTION INDEX: THE CASE OF BRICST COUNTRIES	Assoc.Dr. AYŞE DURGUN KAYGISIZ R. A. SEÇKİN KABAK
		3	INTRA-INDUSTRY TRADE ANALYSIS OF THE TRADE STRUCTURE OF TURKIYE AND THE TURKISH REPUBLIC OF NORTHERN CYPRUS (TRNC)	Prof. Dr. LEVENT KÖSEKAHYAOĞLU R. A. SEÇKİN KABAK Assoc.Dr. AYŞE DURGUN KAYGISIZ
		4	THE RELATIONSHIP BETWEEN DISPLACEMENT ASSOCIATED WITH DISASTERS AND POVERTY IN LESS DEVELOPED COUNTRIES	Öğr. Gör. Aynur KAYA Doç. Dr. Hikmet AKYOL Uzman Şeyma AKÇİÇEK Mücahit ÇELİK

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HALL / SALON 4	**Mehmet Safa BİNGÖL**	1	SOLAR POWER PLANT ELECTRICITY GENERATION FORECASTING USING NONLINEAR AUTOREGRESSIVE NEURAL NETWORK	Şahin YILDIRIM Mehmet Safa BİNGÖL
		2	MECHANICAL PERFORMANCE OF BIODEGRADABLE AND METALLIC SCREWS IN FIFTH METATARSAL FRACTURES	Assoc. Prof. Dr. Hamid ASADI DERESHGI Researcher Dilan DEMIR
		3	WAVE ENERGY AND TURKEY: POTENTIAL, APPLICATIONS, AND FUTURE	Student, Zeynep KOÇ Faculty Member, Assoc. Prof. Dr. Fatih Ünal
		4	THE FUTURE OF DESALINATION IN MERSIN: INTEGRATION OF RENEWABLE ENERGY AND TECHNOLOGY	Student, Zeynep KOÇ Faculty Member, Assoc. Prof. Dr. Fatih Ünal
		5	NUMERICAL MODELLING OF PHOTOVOLTAIC PANELS BY USING MATLAB-SIMULINK	Ceren KARADENIZ Doç. Dr. Sahin GUNGOR
		6	AN EXPERIMENTAL INVESTIGATION ON THE RELATIONSHIP BETWEEN TRANSMITTANCE AND PV PANEL PERFORMANCE	Ceren KARADENIZ Doç. Dr. Sahin GUNGOR

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HALL / SALON 5	**Prof., KADRİYE AYDEMİR**	1	THE RAYLEIGH QUOTIENT FOR ONE SINGULAR STURM-LIOUVILLE PROBLEM	Prof., OKTAY SH. MUKHTAROV Prof., KADRİYE AYDEMİR Assoc. Prof. HAYATİ OLĞAR
		2	TEKİL İKİ-ARALIKLI STURM-LİOUVİLLE PROBLEMLERİNİN ÖZDEĞERLERİNİN POZİTİFLİĞİ	Prof., KADRİYE AYDEMİR Prof., OKTAY SH. MUKHTAROV Assis. Prof. Dr. MERVE YÜCEL
		3	EXISTENCE OF SOLUTIONS FOR GENERALIZED CAPUTO FRACTIONAL BOUNDARY VALUE PROBLEMS	Dr., OZLEM BATIT OZEN
		4	TIME SERIES BASED FINANCIAL COMPONENT FORECASTING MODELS FOR THE E-COMMERCE SECTOR	Emre Taşbaş Mahmut Burak Kazçin Zehra Sude Sarı M. Fatih Akay
		5	DEVELOPMENT OF STATISTICS AND MACHINE LEARNING BASED CASH FORECASTING MODELS FOR AN ELECTRONIC PAYMENT COMPANY	Yusuf Ozan Köftegül Yusuf Ali Koyuncu Zehra Sude Sarı M. Fatih Akay

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HALL / SALON 6	**Assoc. Prof. Dr. Fatih YÜCALAR Prof. Dr. Akın ÖZÇİFT**	1	DEVELOPMENT OF A DIGITAL HOUSEKEEPING SYSTEM TO OPTIMIZE MEZZANINE LOCATIONS IN A WAREHOUSE	Murat Yüce Alişan Araslı Ceren Ulus M. Fatih Akay
		2	DETECTION OF FIELD INVENTORIES IN ENERGY SERVICE COMPANIES USING IMAGE PROCESSING AND DEEP LEARNING	HATICE ÖZDEMİR EYMEN BERKAY YORULMAZ GÖZDE UYGUR ADEM SELLER PROF. DR. M. FATİH AKAY
		3	GEOMETRIC APPROACH FOR PARAMETER ESTIMATION IN THROUGH-THE-WALL RADARS	Assist. Prof. Ridvan Firat Cinar
		4	SYNTHETIC DATA GENERATION WITH LARGE LANGUAGE MODELS TO EVALUATE ENSEMBLE REGRESSION ALGORITHMS	Assoc. Prof. Dr. Fatih YÜCALAR Prof. Dr. Akın ÖZÇİFT
		5	RIDGE REGRESSION PARAMETER OPTIMIZATION IN HOUSE PRICE PREDICTION	Prof. Dr. Akın ÖZÇİFT Assoc. Prof. Dr. Fatih YÜCALAR

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HALL / SALON 7	**Prof. Dr. Elchin Mammadov**	1	ANALYZING KEY FACTORS INFLUENCING CLIENT SATISFACTION IN CONSULTING ENGINEERING FIRMS	Ling Zhang, Prof. Dr. Kenji Nakamura, Akira Yamamoto
		2	DEVELOPMENT OF AI-DRIVEN PREDICTIVE MAINTENANCE SYSTEM FOR ENHANCING EQUIPMENT RELIABILITY	Dr. Kenji Nakamura, Prof. Dr. Mei Ling Chen, Dr. Hyun Soo Park
		3	DEVELOPMENT OF AN INTELLIGENT TASK MANAGEMENT SYSTEM USING AI TECHNOLOGIES	Dr. Leyla Mammadova, Prof. Dr. Farid Aliyev, Dr. Elchin Guliyev
		4	INNOVATIVE APPROACHES FOR CAPTURING SUBCONSCIOUS CONSUMER INSIGHTS IN E-COMMERCE	Dr. Elvin Aliyev, Prof. Dr. Leyla Mammadova, Aysel Huseynova
		5	CONTRACTOR SELECTION IN CONSTRUCTION PROJECTS USING MULTI-CRITERIA DECISION-MAKING AND SUPPLY CHAIN MANAGEMENT	Dr. Leyla Aliyeva, Prof. Dr. Elchin Mammadov
		6	FRAMEWORK FOR ENHANCING QUALITY CULTURE IN ALGERIAN HIGHER EDUCATION INSTITUTIONS	Dr. Ahmed Benali, Prof. Dr. Fatima Zahra, and Mr. Samir Khaled
		7	ENHANCING INSTITUTIONAL EFFECTIVENESS: THE STRATEGIC IMPORTANCE OF WORKFORCE BUDGETING IN FINANCIAL	Dr. Samira El Amrani, Prof. Dr. Ahmed Bouziane, Fatima Zahra Laaroussi
		8	EXAMINING URBANIZATION AND INCOME INEQUALITY IN ALGERIA	Dr. Amina Benali, Prof. Dr. Khalid Ziani, Fatima Zahra Lala
		9		

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HALL / SALON 8	**Prof. Dr. Noraida Mustaffa,**	1	CROSS-CULTURAL DYNAMICS AND INNOVATION: INSIGHTS INTO CHINESE FOREIGN DIRECT INVESTMENT IN ALGERIA	Dr. Ahmed Bensaid, Prof. Dr. Leila Nasr, Dr. Farid Touati
		2	EVALUATING THE INFLUENCE OF MARITIME TRANSPORT ON ECONOMIC GROWTH IN MALAYSIA	Dr. Ahmad Zainal, Prof. Dr. Noraida Mustaffa, Eng. Firdaus Rahman
		3	CROSS-CULTURAL COLLABORATIONS AND INNOVATION: ANALYZING CHINESE FOREIGN DIRECT INVESTMENT IN MALAYSIA	Dr. Siti Nurhaliza, Prof. Dr. Ahmad Faizal, Dr. Zainal Abidin
		4	KEY DETERMINANTS OF COST OVERRUN IN BUILDING CONSTRUCTION PROJECTS IN MALAYSIA	Dr. Ahmad Z. Ismail, Prof. Dr. Nurul H. Rashid, Eng. Farhan K. Ali
		5	THE EFFECTS OF THE COVID-19 PANDEMIC ON THE REAL ESTATE SECTOR	Dr. Mihai Ionescu, Prof. Dr. Elena Popescu, Andreea Vasilescu
		6	ASSESSING THE IMPACT OF CHINESE FOREIGN DIRECT INVESTMENT IN AFRICA: ETHICAL AND CULTURAL DIMENSIONS	Dr. Amina Nkosi, Professor Michael Adebayo, Dr. Lindiwe Tshabalala
		7	ENHANCING OPERATIONAL EFFICIENCY THROUGH LEAN METHODOLOGIES IN AFRICAN INDUSTRIES	Dr. Amina O. Kone, Prof. Dr. Samuel T. Ndung'u, Dr. Zainab I. Moyo
		8	EXPLORING LEAN METHODOLOGIES IN CONSTRUCTION: CHALLENGES AND OPPORTUNITIES	Dr. Aisha Mwanga, Prof. Dr. Samuel Ndungu, Grace Ochieng
			EXPLORING THE METHODOLOGICAL FRAMEWORK OF ISLAMIC ECONOMICS: OPPORTUNITIES AND CHALLENGES	Prof. Dr. Idris Karamoko
		9	EXPLORING THE INTERCONNECTION BETWEEN INDIVIDUAL AND ORGANIZATIONAL RESILIENCE IN THE CONSTRUCTION SECTOR	Dr. Amina Nkosi, Prof. Dr. Kofi Mensah, Thandiwe Moyo

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HALL / SALON 9	**Dr. Dmitry Sokolov**	1	STRATEGIC PLANNING FOR SUSTAINABILITY IN NGOS AND ITS INFLUENCE ON DONOR COMMITMENT	Dr. Nino Chikovani, Prof. Dr. Levan Kapanadze, Anna Tskhvedadze
		2	EXAMINATION OF SUSTAINABILITY REGULATION IN THE FINANCIAL SECTOR OF GEORGIA	Nino Janelidze, PhD; Giorgi Kvesitadze, MSc
		3	FORECASTING COPPER PRICES: A HYBRID APPROACH FOR ECONOMIC VARIABILITY	Prof. Dr. Giorgi M. Jojua, Dr. Nino K. Koberidze, Mr. Alexander T. Tsiklauri
		4	IMPACT OF ORGANIZATIONAL CULTURE ON DISPUTE FREQUENCY IN COMMERCIAL CONSTRUCTION PROJECTS: A CONTRACTOR'S PERSPECTIVE	Dr. Alexei Ivanov, Dr. Elena Petrovna, Andrei Sokolov
		5	IDENTIFYING NEET YOUTH RISK FACTORS IN RUSSIA: A MACHINE LEARNING ANALYSIS	Dr. Alexei Ivanov, Prof. Dr. Maria Petrovna, Dr. Dmitry Sokolov
		6	EVALUATION OF INNOVATION STRATEGIES IN SMALL AND MEDIUM-SIZED ENTERPRISES USING THE STAGE-GATE MODEL	Dmitry Ivanov, Elena Petrovna, Alexey Sokolov

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HALL / SALON 10	**Prof. Dr. Antonio R. Delos Reyes,**	1	ENHANCEMENT OF LITERACY SKILLS THROUGH A PROPOSED MODULE FOR BAYBAYIN INSTRUCTION	Dr. Elena Marie J. Cruz, Prof. Dr. Antonio R. Delos Reyes,
		2	ENHANCING ADULT EDUCATION INITIATIVES TO COMBAT FEMALE GENITAL MUTILATION AND ACHIEVE SUSTAINABLE DEVELOPMENT GOALS	Dr. Maria Santos, Prof. Dr. Juanita Reyes, Carlos Delgado
		3	ENHANCING LITERACY COMPETENCIES THROUGH AN INNOVATIVE MODULE FOR JAVANESE SCRIPT INSTRUCTION	Rina S. Aditya, Prof. Dr. Hendra Y. Santosa, and Ms. Maya P. Pramesti
		4	EMOTIONAL INFLUENCES ON STUDENT LEARNING AND ACADEMIC PERFORMANCE	Dr. Aisha Abdulaziz, Prof. Dr. Oluwaseun Bamidele, Mr. Dapo Kehinde
		5	INNOVATIVE APPROACHES IN SMART LEARNING SYSTEMS FOR MUSIC EDUCATION	Dr. Elena Vasilaki, Prof. Dr. Dimitris Kourouklis, Dr. Sofia Christodoulou
		6	THE ROLE OF URBAN ART IN FOSTERING REFLECTIVE PRACTICES IN EDUCATION	Dr. Alain M. Ngoy, Prof. Dr. Celestine T. Mbuyi, Ms. Amani N. Kalu
		7	ENHANCING INTERDISCIPLINARY APPROACHES IN EDUCATION: A FOCUS ON MATHEMATICS	Dr. Jean-Pierre Monga, Prof. Dr. Mireille Ngalula, Claude Makaya
		8	ENHANCING MATHEMATICAL UNDERSTANDING THROUGH ORIGAMI: A CASE STUDY	Dr. Fatma Al-Masri, Prof. Dr. Ahmed El-Sayed
		9	DECENTRALIZED ASSIGNMENT MANAGEMENT SYSTEM UTILIZING BLOCKCHAIN TECHNOLOGY	Dr. Ahmed Farouk, Prof. Dr. Sara Mahmoud, Nour El-Sayed, Dr. Khaled Hassan Prof. Dr. Fatima Zohra

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HALL / SALON 11	**Assoc. Prof. Aibek Shakirov,**	1	EXPLORING THE EFFECTS OF INADEQUATE TEACHER-STUDENT INTERACTIONS ON CHRONIC ABSENTEEISM IN SECONDARY SCHOOLS OF BANGLADESH	Dr. Rina Bhatia, Prof. Anwar Hossain, Asif Rahman
		2	UNDERSTANDING MOTIVATIONAL FACTORS IN ENGLISH LANGUAGE ACQUISITION: A STUDY AT A BELGIAN UNIVERSITY	Dr. Elise Dubois, Prof. Henri Martin, Laura Petit
		3	ENHANCING PROGRAMMING EDUCATION THROUGH AN INNOVATIVE COLLABORATIVE LEARNING MODEL	Authors: Dr. Annelies Vermeulen, Prof. Thomas Devries Joris Van Dyck
		4	EVALUATING THE IMPACT OF DIGITAL TECHNOLOGIES ON ASSESSMENT PRACTICES IN HIGHER EDUCATION	Dr. Amina Rahimi, Prof. Jamil Azizi, Ms. Fatima Mohseni
		5	INFLUENCE OF NON-PARENTAL EARLY CHILDHOOD EDUCATION ON VIRTUAL FRIENDSHIP DYNAMICS	Dr. Aigerim Tulegenova, Assoc. Prof. Aibek Shakirov, and Nurlan Askarov
		6	INFLUENCE OF NON-PARENTAL EARLY CHILDHOOD EDUCATION ON VIRTUAL FRIENDSHIP DYNAMICS	Dr. Aigerim Tulegenova, Assoc. Prof. Aibek Shakirov, and Nurlan Askarov
		7	THE IMPACT OF SUCCESS EXPECTATION ON STUDENT PERFORMANCE IN SUMMATIVE ASSESSMENTS	Dr. Marko Novak, Prof. Ivana Petrovic, and Ana Kovač
		8	STRATEGIC FRAMEWORK FOR DIGITAL CONTENT MANAGEMENT: A COMPREHENSIVE ANALYSIS	Dr. Ivan Petrov, Ms. Hana Kovač, Prof. Luka Jurić, Dr. Marija Novak
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HALL / SALON 1	**Prof. Dr. Mehmet Nuri ÇINARCI**	1	Museum Anthropology	Assoc. Prof. Dr. Zekiye ÇILDIR,
		2	MİĞFER ADLI ÇOCUK TİYATROSU METNİ ÜZERİNE BİR ÇÖZÜMELEME	Doç. Dr. Erhan ŞEN
		3	"AKLINDAN DÜŞÜNCELER GEÇEN ÇOCUK" ADLI ÇOCUK ROMANI ÜZERİNE BİR İNCELEME	Doç. Dr. Erhan ŞEN
		4	POEM AND POET IN THE EARLY PERSIAN TEZKIRES	Prof. Dr. Mehmet Nuri ÇINARCI
		5	ALLEGORICAL INTERPRETATION IN ANNOTATION OF VEHBÎ-İ KONEVÎ'S ŞERH-İ DÎVÂN-I HÂFIZ	Prof. Dr. Mehmet Nuri ÇINARCI
		6	MEMMED ARİF DADAŞZADE'NİN EDEBİ FAALİYETLERİ	Doç. Dr. Ayvaz MORKOÇ
		7	ELEŞTİRMEN KİMLİĞİYLE BEKİR NEBİYEV	Doç. Dr. Ayvaz MORKOÇ
		8	THE INTELLECTUALS OF CLASSİCAL TURKİSH LİTERATURE	PhD Student ŞEYDA GÖLLÜ

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HALL / SALON 2	**Assoc. Prof. SERVET SAY**	1	CALCULATION AND ACCOUNTING OF RISTURN IN COOPERATIVES	Assoc. Prof. SERVET SAY
		2	THE EFFECTS OF LEAVEİSM İN MODERN BUSİNESS LİFE	Dr., Fatih İbrahim KURŞUNMADEN
		3	INFLATİON ACCOUNTİNG	Dr. Fırat KINALI
		4	EVALUATION OF METROPOLITAN DISTRICT MUNICIPALITY MANAGEMENT BODIES IN TURKEY	Lect. Mehmet Nuri ÖDÜK

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HALL / SALON 3	**Prof. Dr. Belgin COŞGE ŞENKAL**	1	MODELING THE OPTIMUM IRRIGATION THAT PROVIDES THE HIGHEST TOMATO YIELD IN ANKARA REGION WITH DSSAT	Ziraat Yüksek Mühendisi, Abdelrahman Amr Ali Rabie Elsayed SALEH Araştırma Görevlisi, Elifnaz TORUN Profesör, Halit APAYDIN
		2	EVALUATION OF RELATIONSHIPS BETWEEN SEED YIELD AND SOME AGRONOMIC CHARACTERS IN SAFFLOWER (CARTHAMUS TINCTORIUS L.)	Prof. Dr. Belgin COŞGE ŞENKAL
		3	SAFFLOWER (CARTHAMUS TINCTORIUS L.) BREEDING OBJECTIVES	Prof. Dr. Belgin COŞGE ŞENKAL
		4	DETERMINATION OF FORAGE PERFORMANCES OF SOME SORGHUM (Sorghum bicolor (L.)) VARIETIES IN ANTALYA CONDITIONS	Assoc. Prof. Dr. Cengiz ERDURMUŞ
		5	IMPACTS OF CLIMATE CHANGE ON IRRIGATION AND AGRICULTURAL PRODUCTION: THE FUTURE OF WATER IN ANTALYA, TÜRKİYE	Assoc. Prof. Köksal AYDİNŞAKİR,
		6	DETERMINATION OF THE SUITABILITY OF DIFFERENT WATER RESOURCES FOR IRRIGATION IN AYAŞ REGION	Ziraat Yük. Müh. Ayfer BURDURLUOĞLU Prof. Dr. Ahmet ÖZTÜRK

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HALL / SALON 4	Assoc. Prof. Dr. MÜJGAN GÜNEY	1	THE ROLE OF SECONDARY METABOLITES IN PLANT STRESS RESPONSES: BIOTECHNOLOGICAL APPROACHES FOR CROP IMPROVEMENT	Assoc. Prof. Dr. MÜJGAN GÜNEY Assoc. Prof. Dr. HAKAN KELES Assoc. Prof. Dr. SERVET ARAS
		2	CHITOSAN NANOPARTICLES AND THEIR INFLUENCE ON GENE EXPRESSION AND SECONDARY METABOLISM IN FRUITS	Assoc. Prof. Dr. MÜJGAN GÜNEY Assist. Prof. Dr. GÖKÇE AYDÖNER ÇOBAN Assoc. Prof. Dr. MURAT GÜNEY
		3	USE OF ROOTSTOCKS IN WALNUT CULTIVATION	Doç. Dr. HAKAN KELES Doç. Dr. MÜJGAN GÜNEY Dr. Öğr. Üyesi GÖKÇE AYDÖNER ÇOBAN
		4	USE OF NANOPARTICLES IN AGRICULTURE	Doç. Dr. HAKAN KELES Doç. Dr. Servet ARAS Doç. Dr. Murat GÜNEY
		5	ANATOMICAL ALTERATIONS AFFECT BIODIVERSITY OF FRUIT SPECIES	Assoc. Prof. Dr. Servet ARAS Assoc. Prof. Dr. MURAT GÜNEY Assoc. Prof. Dr. Hakan KELES
		6	EFFECTS OF ABIOTIC STRESS FACTORS ON FRUIT SPECIES BIODIVERSITY	Assoc. Prof. Dr. Servet ARAS Assoc. Prof. Dr. Müjgan GÜNEY Assist. Prof. Dr. Gökçe AYDONER ÇOBAN
		7	APPLE (Malus domestica) miRNA EXPRESSION AND HORTICULTURAL IMPLICATIONS	Assoc. Prof. Dr. Murat GÜNEY Asst. Prof. Dr. Gökçe Aydöner ÇOBAN Assoc. Prof. Dr. Zeynep ERGÜN
		8	SSR AND TRANSCRIPTOME ANALYSIS IN HORTICULTURAL FRUITS	Assoc. Prof. Dr. Murat GÜNEY Assoc. Prof. Dr. Hakan KELES Assoc. Prof. Dr. Servet ARAS
		9	SOME AMINO ACIDS USED TO ENHANCE STRESS TOLERANCE IN VEGETABLES AND THEIR EFFECTS	Assist. Prof. Dr. GÖKÇE AYDÖNER ÇOBAN Assoc. Prof. Dr. ZEYNEP ERGÜN Assoc. Prof. Dr. SERVET ARAS
		10	THE POTENTIAL USE OF *CHLORELLA VULGARIS* AS A BIOFERTILIZER IN SOILLESS CULTURE	Assist. Prof. Dr. GÖKÇE AYDÖNER ÇOBAN Assoc. Prof. Dr. HAKAN KELES Assoc. Prof. Dr. MURAT GÜNEY

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HALL / SALON 5	**Doç. Dr. Yasemin BAKİ**	1	GLOBAL RESEARCH TRENDS OF TRANSFORMATIONAL LEADERSHIP IN ICT DEVELOPMENT IN FAITH-BASED SCHOOLS AND BIBLIOMETRIC ENGINEERING CULTURE	Nuniek Rahmatika Suyatno Dody Hartanto
		2	DİLBİLİMDE SÖYLEM ANALİZİ NEDİR?	ILAHE NIYAZOVA
		3	ÇOCUK YAZININDA ELEŞTİREL DÜŞÜNME BECERİLERİ VE YETERLİKLERİ: ÇANTAMDAN FİL ÇIKTI ÖRNEĞİ	Öğretmen, Mehtap DURMUŞ Doç. Dr. Yasemin BAKİ
		4	ÇOCUK YAZININDA ÇATIŞMA TÜRLERİ VE ÇATIŞMA ÇÖZME YÖNTEMLERİ: MAVİ RÜYALAR GÖREN ÇOCUK	Doç. Dr. Yasemin BAKİ Öğretmen, Mehtap DURMUŞ
		5	ÇOCUK YAZININDA ELEŞTİREL DÜŞÜNME BECERİLERİ VE ENGELLERİ: BİLGE ÇİÇEĞİ	Uzm. Öğretmen Esengül Gündoğdu

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HALL / SALON 6	**Prof. Dr. Nihal BALOĞLU UĞURLU**	1	ÇOCUK KİTAPLARININ DEĞERLER EĞİTİMİ AÇISINDAN İNCELENMESİ: DEDEMİN KURABİYELERİ ÖRNEĞİ	Öğretmen, Şehriban GÜNCE
		2	FEN LİSESİ ÖĞRENCİLERİNİN BEDEN EĞİTİMİ DERSİ SPORTMENLİK DAVRANIŞLARININ İNCELENMESİ	Seda AKBULUT Dr. Mesut BULUT Prof. Dr. Oğuzhan ALTUNGÜL Dr. Didem YAVUZ SÖYLER
		3	KALIP YARGILAR ÖLÇEĞİ'NİN (KYÖ) GELİŞTİRİLMESİ: GEÇERLİK VE GÜVENİRLİK ÇALIŞMASI	İbrahim KAYA Prof. Dr. Nihal BALOĞLU UĞURLU
		4	DİL BİLGİSİ KONULARININ ÖĞRETİMİNDE OYUNLAŞTIRMANIN KULLANIMI; BİR LİTERATÜR TARAMA ÇALIŞMASI	Yüksek Lisans Öğrencisi Işıl ÖZTÜRK Doç. Dr. Perihan Gülce ÖZKAYA
		5	ÖZEL EĞİTİMDE TEKNOLOJİ KULLANIMI: BİR META-ANALİZ ÇALIŞMASI	Prof. Dr. SEVAL ERDEN ÇINAR BÜŞRA CEYHAN
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HALL / SALON 7	**Lect. Mehmet Nuri ÖDÜK**	1	THE EFFECT OF BLOCKCHAIN TECHNOLOGY ON ACCOUNTING	Assoc. Prof. SERVET SAY
		2	THE IMPACT OF DIGITAL TRANSFORMATION ON BUSINESS MANAGEMENT AND INNOVATIVE STRATEGIES	Dr., Fatih İbrahim KURŞUNMADEN
		3	DIGITAL TRANSFORMATION IN ACCOUNTING AUDIT	Dr. Fırat KINALI
		4	USE OF FUZZY EXPERT SYSTEM IN DIAGNOSIS OF CORONAVIRUS (COVIT 19) DISEASE	Lect. Mehmet Nuri ÖDÜK

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HALL / SALON 8	**Assoc. Prof. Dr. Luka Kovač,**	1	THE ROLE OF NARRATIVE IN FOSTERING EMOTIONAL INTELLIGENCE AMONG PRIMARY SCHOOL STUDENTS	Dr. Maria Rossi, Prof. Luca Verdi
		2	EVALUATING LEARNING ENHANCEMENT IN FREE-FALL MOTION THROUGH PRIOR CONCEPT UTILIZATION	Dr. Andrei Ionescu, Prof. Elena Popescu, Radu Mihai
		3	ENHANCING READING COMPREHENSION THROUGH INTEGRATED INSTRUCTIONAL MODELS	Dr. Anjali Sharma, Prof. Ramesh Patel, Dr. Priya Mehta
		4	ENHANCING THE BIOMEDICAL ENGINEERING COMMUNITY THROUGH OUTREACH INITIATIVES IN INDIA	Dr. Aditi Sharma, Prof. Rohan Mehta, Sneha Gupta, Dr. Vikram Singh, Priya Joshi
		5	ENHANCING UNIVERSITY ACCESS FOR STUDENTS WITH SPECIAL EDUCATIONAL NEEDS: REFLECTIONS ON TEACHER TRAINING	Assoc. Prof. Dr. Luka Kovač, Ana Petrić
		6	EXPLORING TEACHER LEADERSHIP IN CLASSROOM INTERACTIONS: A LIFEWORLD PERSPECTIVE	Prof.Dr. Ana Petrovic, Maja Kovač
		7	EXPLORING THE CHARACTERISTICS OF EFFECTIVE, EXCEPTIONAL, AND INSPIRATIONAL EDUCATORS	Prof. Dr. Marko Petrovic, Jela Kralj
		8	EVALUATING SECONDARY SCHOOL CURRICULA FOR ENHANCING STUDENTS' QUALITY OF LIFE	Prof. Jan Novák, Dr. Eva Dvořáková, Petr Šebek, Bc. Anna Svobodová,
		9	INNOVATIVE APPROACHES TO DIGITAL LEARNING IN SUSTAINABLE AGRICULTURAL EDUCATION	Prof. Martina Horakova, Klara Dvorak, Dr. Eva Zelenkova

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HALL / SALON 9	**Dr. Adnan Mujkić,**	1	VISUAL NARRATIVES IN CHILDREN'S LITERATURE: EMOTIONAL IMPACT AND EDUCATIONAL POTENTIAL	. Amir Dervišević, Prof. Selma Husić, Dr. Kenan Avdić
		2	VISUAL PERCEPTION OF ONLINE MARKETING STRATEGIES BY INTERNATIONAL STUDENTS AT A BOSNIAN UNIVERSITY	Authors: Dr. Adnan Mujkić, Prof. Dr. Lejla Husić, and Fatima Delić
		3	EVALUATING THE IMPACT OF VIRTUAL REALITY ON STUDENT ENGAGEMENT IN ENGLISH LANGUAGE LEARNING	Dr. Luca Rossi, Prof. Dr. Maria Bianchi, Giulia Conti
		4	EXPLORING STUDENTS' COMMUNICATION ANXIETIES AND EVALUATION CHALLENGES IN ONLINE SPEECH ACTIVITIES	Dr. Alessandro Rossi, Prof. Maria Verdi, and Luca Bianchi
		5	EXPLORING THE TRANSITION OF ITALIAN CHILDREN FROM KINDERGARTEN TO PRIMARY SCHOOL: A QUALITATIVE STUDY	Dr. Alessandro Rossi, Elena Bianchi, Dr. Marco Verdi
		6	ASSESSING EDUCATOR CULTURAL PROFICIENCY: A STUDY OF THREE LOCAL PRIMARY SCHOOLS	Dr. Amina El-Hamidi, Youssef Bensalem, Fatima Zahra Idrissi
		7	EVALUATING THE INFLUENCE OF INTRODUCTORY TECHNOLOGY COURSES ON STEM MAJOR CHOICES	Dr. Amina El Haddad, Prof. Dr. Khalid Bouchara, Fatima Zahra Benali
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HALL / SALON 10	**Assoc. Prof. Dr. Amina Suleiman,**	1	ENHANCING MULTIVARIABLE CALCULUS LEARNING THROUGH AUGMENTED AND VIRTUAL REALITY TECHNOLOGIES	Dr. Ahmed Al-Saad, Dr. Layla Farhan, Dr. Samir Khaled
		2	RETHINKING THE CRIMINALIZATION OF HOMELESSNESS: INNOVATIVE APPROACHES AND THE IMPLEMENTATION OF JAMAICA'S HOPE COURT	Dr. Marcus Johnson, Leila Grant, Ms. Talia Brown
		3	ECONOMIC IMPACT ASSESSMENT OF TOURISM: A COMPREHENSIVE FRAMEWORK	Dr. Janelle Smith, Prof. Marcus Hinds, Dr. Alex Thompson
		4	THE PARADOX OF EMPOWERMENT: ANALYZING THE ROLE OF GOSSIP IN FEMALE AGENCY	Dr. Amina Bouazizi, Prof. Dr. Sami Ben Ali
		5	ADDRESSING HUMAN RIGHTS VIOLATIONS AGAINST HEALTHCARE WORKERS IN TUNISIA: A POLICY PERSPECTIVE	Dr. Samira Ben Ali, Prof. Khaled Elhadi, Dr. Fatima Zohra Mansour, Dr. Aymen
		6	FAITH-BASED RESPONSES TO HUMANITARIAN CRISES: THE ROLE OF THE ANGLICAN CHURCH DURING THE BIAFRAN CONFLICT	Professor Adebayo Ogunleye, Dr. Chiamaka Ijeoma, Yetunde Alabi
		7	EXPLORING THE ROCK ART OF THE NORTHERN REGION: SITES OF NSUKKA, NIGERIA	Dr. Chijioke Okafor, Assoc. Prof. Dr. Amina Suleiman, and Dr. Ifeoma Nwosu
		8	CINEMATIC NARRATIVES OF DISPLACEMENT: A STUDY OF MEMORY REPRESENTATION IN BANGLADESHI AND INDIAN FILMS	Dr. Amina Rahman, Prof. Haris Chowdhury, and Mr. Anik Hasan
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HALL / SALON 11	**Prof. Jacques Martin,**	1	SCIENTIFIC INSIGHTS INTO THE CONCEPT OF "FERTILIZING WINDS" IN QURANIC VERSE 15:22	Dr. A. H. Rahman, Prof. S. N. Khan, Mr. T. Z. Rahman
		2	NAVIGATING IMMIGRATION CHALLENGES FOR CONVENTION REFUGEES IN BELGIUM	: Dr. Eliane Dubois, Prof. Jacques Martin, Dr. Sofia Vermeer
		3	INVESTIGATING THE ROOTS OF ANTI-WESTERN SENTIMENT IN THE ARAB WORLD AND ITS IMPACT ON SUPPORT FOR RUSSIA IN THE UKRAINE WAR	Dr. Anisa Kamel, Prof. Dr. Emil Novak, and Dr. Liam Schmidt
		4	THE TRANSFORMATIVE ROLE OF TELECOMMUNICATION IN EUROPE: ENHANCING CONNECTIVITY AND QUALITY OF LIFE	Prof. Elena Schmidt, Dr. Marco Rossi, Ms. Ana Ivanova
		5	CULTURAL DIMENSIONS INFLUENCING QUALITY ASSURANCE IMPLEMENTATION IN HIGHER EDUCATION: A COMPARATIVE STUDY	Dr. Mateo Alvarado, Prof. Dr. Lucia Martinez, Dr. Sergio Ramos
		6	ADDRESSING THE TRIADIC CHALLENGES OF SUSTAINABILITY IN HIGHER EDUCATION	Dr. Youssef Elhaj, Amina Fassi, Dr. Latifa Bouhlal
		7	GENDER REPRESENTATION IN PRIMARY EDUCATION: INSIGHTS FROM TEACHERS	Dr. Erdenebat Gankhuyag, Sarnai Baatar, Nomin Erdene
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HALL / SALON 12	**Dr. Leila M. Bouali**	1	COMPUTER GRAPHICS AND UNDERSTANDING SEMIOTICS IN DESIGN	Manoj Majhi, Debkumar Chakrabaty
		2	ANALYZING STUDENT SATISFACTION AMONG WORK-BASED LEARNERS	Julia L. Harris, Ahmed T. Fawzi
		3	ASSESSING THE USABILITY OF AN EDUCATIONAL PORTAL FOR IT FACULTY AT THE UNIVERSITY OF LIBYA	Khaled R. Badr, Laila S. Hamed
		4	DEVELOPING PROBLEM-SOLVING SKILLS IN ENGINEERING STUDENTS THROUGH ENGLISH LANGUAGE INSTRUCTION	Dr. Sarah J. Al-Sayed
		5	TEXTURES FOR THE VISUALLY IMPAIRED: A STUDY OF HIMMAPAN CREATURES	Dr. Alex Thompson, Emily Carter
		6	ENGLISH LANGUAGE TEACHING IN THE CONTEXT OF LMD REFORMS: A STUDY FROM ALGERIA	Dr. Leila M. Bouali
		7	DEVELOPING INFORMATIONAL CULTURE AMONG STUDENTS: STRATEGIES AND METHODS	Aigerim K. Nurpeissova
		8	VIRTUAL COLLABORATIVE LEARNING: ENHANCING STUDENT PERFORMANCE IN BAHRAIN	Dr. Omar S. Al-Nasr
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HALL / SALON 13	**Dr. Chika Afolabi,**	1	TOWARD A MODEL FOR KNOWLEDGE DEVELOPMENT IN VIRTUAL ENVIRONMENTS: STRATEGIES FOR STUDENT OWNERSHIP	N.B. Adams
		2	THE FUTURE OF OPEN EDUCATION AND DISTANCE LEARNING IN ZAMBIA	*Jane Mwansa*
		3	NAVIGATING BETWEEN POLICY FRAMEWORKS AND TECHNOLOGICAL INNOVATIONS: EVALUATING THE SUSTAINABILITY OF DISTANCE EDUCATION	*Ravi Desai*
		4	FACULTY PERCEPTIONS ON THE IMPORTANCE OF COMPONENTS IN A VIRTUAL LEARNING ENVIRONMENT	Assoc. Prof. Dr. Emily Roberts, Michael Chen
		5	APPLYING THE STUDENT-CENTRIC APPROACH IN TECHNOLOGY EDUCATION: STUDENT INSIGHTS	Amina Shah
		6	LEVERAGING BLOGGING TO FOSTER CRITICAL THINKING: A PILOT STUDY	Lena Kim, Daniel Zhang
		7	THE EXPERIENCES OF NIGERIAN SECONDARY SCHOOL GIRLS IN A DIGITAL MAKERSPACE	Dr. Chika Afolabi, Sadiq Adediran
		8	INVESTIGATING SELF-DIRECTED LEARNING IN YOUNG LEARNERS	Sara A. Kahn, Hassan Faridi
		9	THE ROLE OF GOVERNMENT, LOCAL COMMUNITIES, AND PARTICIPATORY GOVERNANCE: OPPORTUNITIES FOR TRANSFORMATION	Elena V. Petrov

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Salon	Moderator		Bildiri No ve Başlığı / Paper ID and Title	Authors
HALL / SALON 1	Asst. Prof., MUAMMER AYATA	1	A COMPREHENSIVE STUDY OF THE KAUP-KUPERSHMIDT EQUATION WITH CONFORMABLE DERIVATIVE	Asst. Prof., MUAMMER AYATA
		2	INVESTIGATION OF MAIZE GENOTYPES BASED ON SEEDLING AND FIELD TRAITS FOR DROUGHT TOLERANCE	Assoc. Prof. Dr. Sekip ERDAL Dr. Akın TEPE Agricultural Engineer Mehmet PAMUKÇU Dr. Senem Sabancı BAL Msc. Burak YILDIZGÖRER
		3	AN OVERVIEW TO THE ACTIVITIES AND ACADEMIC STUDIES IN GREEN MANUFACTURING	Asst. Prof. Dr. Şafak ATAŞ Assoc. Prof. Dr. Serhat Orkun TAN Prof. Dr. İlker TÜRKER
		4	Production of Alumina-Copper Hybrid Composites by Hot Pressing Technique: Investigation of Mechanical, Structural, and Tribological Properties	Merve HORLU Eda ÇULLU FERŞAT Cevher Kürşat MACİT Bünyamin AKSAKAL
		5	PEEK CF30 TERMOPLASTİK MALZEMENİN DELİNMESİNDE DELME PARAMETRELERİNİN OPTİMİZASYONU	Doç. Dr. Mehmet BOY Doç. Dr. Nafiz YAŞAR Doç. Dr. Mehmet Erdi Korkmaz
		6	BÖHLER K490 ÇELİĞİNİN SERMET KESİCİ TAKIMLA İŞLNEBİLİRLİĞİNİN ARAŞTIRILMASI	Doç. Dr. Mehmet BOY Ahmet AYDİN

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HALL / SALON 1	**Prof. Dr. REFİKA ALTIKULAÇ DEMİRDAĞ**	1	Çocuk Edebiyatında Tip Problemi ve Örnek Bir Uygulama: Lo	Prof. Dr. REFİKA ALTIKULAÇ DEMİRDAĞ Arş. Gör. BİLGE DESTEGÜLOĞLU Arş. Gör. MERVE ERCAN
		2	ÇERKES TOPLUMUNDA GELENEKSEL ÇAY OLARAK TÜKETİLEN LABADA BİTKİSİNİN GASTRONOMİK AÇIDAN İNCELENMESİ	Öğr. Gör. Sevinç KUŞ
		3	İŞ YERİ MUTLULUĞUNUN TESİSİNDE OLUMLU VE DESTEKLEYİCİ ÖRGÜT KÜLTÜRÜNÜN ETKİN ROLÜ	Öğr. Gör. Dr. BETÜL GÜMÜŞ

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HALL / SALON 1	**Doç. Dr., MUSTAFA NAL**	1	YÖNETİCİLER AÇISINDAN DOĞRU VE ZAMANINDA KARAR ALMANIN ÖNEMİ	Dr. Öğretim Üyesi SELAMİ ÖZKAN
		2	DÖNÜŞÜMCÜ LİDERLİK: BİBLİYOMETRİK ANALİZ	Doç. Dr., MUSTAFA NAL
		3	YALIN YÖNETİM ARAŞTIRMALARINA GENEL BAKIŞ: BİBLİYOMETRİK ANALİZ	Doç. Dr., MUSTAFA NAL
		4	SAĞLIK ÇALIŞANLARININ TEKNOSTRES VE TÜKENMİŞLİK DÜZEYLERİNİN İNCELENMESİ	Arş.Gör.Dr. GÜLİZAR GÜLCAN ŞEREMET Dr.Öğr.Üyesi DİLEK USLU
		5	TÜRKİYE'DE HAVAYOLU ULAŞIMINDAN MEMNUNİYET DÜZEYİ VE İLİŞKİLİ FAKTÖRLER	Dr. Öğr. Üyesi Şeyda ÜNVER Prof. Dr. Ömer ALKAN
		6	THE ROLE OF PARASOCIAL INTERACTION IN IMPULSE BUYING BEHAVIOR	Asst. Prof. Bilal CELIK Irem Deniz BILGI

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HALL / SALON 2	**Assoc. Prof. SANVER ÖZGÜVEN**	1	PASSPORT AND VISA APPLICATIONS IN THE CONTEXT OF FREEDOM OF TRAVEL DURING THE REPUBLICAN ERA	Dr. Research Assistant Elif AŞCI
		2	ENDÜLÜS İSMİ ÜZERİNE TARTIŞMALAR VE PROBLEMLER	Arş. Gör. Yaşar Emrah KOŞDAŞ
		3	"TANZİMAT" LİTERARY SOURCES OF AZERBAİJANİ ENLİGHTENED REALİST PROSE	TELLİ ƏLİYEVA
		4	AKILAY'DA DEĞERLER EĞİTİMİ	Öğr. Gör. Sedef GÖLTAŞ
		5	INFLUENCES OF COMMEDIA DELL'ARTE IN COMIC OPERA: THE MARRIAGE OF FIGARO	Öğretim Görevlisi, FURKAN AKTAKKA
		6	GÜNCEL SANATTA DESENİN SOYUTLANMASI ÜZERİNE BİR İNCELEME	Yüksek Lisans Öğrencisi Deniz ÖZTÜRK ÖÇAL Doc.Dr.Ahmet Kürşat ALBAYRAK
		7	PICTORIAL EXPRESSION IN MOLLY HATCH'S CERAMICS	Assoc. Prof. SANVER ÖZGÜVEN
		8	AN ANALYSIS OF BIOMIMETIC ELEMENTS IN LOUIS C. TIFFANY'S DESIGNS	Assoc. Prof. SANVER ÖZGÜVEN

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HALL / SALON 3	**Prof. Dr. Oya ŞAKI AYDIN**	1	THE UNBEARABLE LIGHTNESS OF DEATH" IN DIGITAL MEDIA	Assoc. Prof. Dr. Ayşe Gül SONCU
		2	DIGITAL CULTURE AND EVERYDAY LIFE EXPANSIONS OF MEDIA: ACTIVE USERS OR PASSIVE CONSUMERS?	Prof. Dr. Oya ŞAKI AYDIN
		3	DIGITAL CULTURE, ARTIFICIAL INTELLIGENCE AND THE FUTURE OF CHILD USERS	Prof. Dr. Oya ŞAKI AYDIN
		4	VISUAL COMMUNICATION AND ALTERNATIVE EXPRESSION METHODS: LESSONS TO LEARN FROM DAVID CARSON	Arş. Gör. Dr., EMİNE TUBA ERDOĞAN
		5	GEÇMİŞTE BİR ARADA YAŞAMA KÜLTÜRÜ: DEĞİŞKENLER VE PEKİŞTİREÇLER	Dr. REYYAN AKKAŞ PROF. DR. İHSAN ÇAPCIOĞLU
		6	GÜNÜMÜZDE BİR ARADA YAŞAMA KÜLTÜRÜNÜ ETKİLEYEN FAKTÖRLER ÜZERİNE SOSYOLOJİK BİR DEĞERLENDİRME	Dr. REYYAN AKKAŞ PROF. DR. İHSAN ÇAPCIOĞLU

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HALL / SALON 4	**Assistant Professor ÖMER FARUK NEMUTLU**	1	EXAMINATION OF GROUND MOTION RECORDS OF 16 OCTOBER 2024, KALE-MALATYA 5.9 (Mw) EARTHQUAKE	Assistant Professor ÖMER FARUK NEMUTLU
		2	EXAMINATION OF TRANSPORTATION PROJECTS PLANNED TO BE CONDUCTED IN BURSA IN TERMS OF FEASIBILITY AND APPLICABILITY	Res. Ast., AHMET ÜNAL Prof. Dr., Ahmet TORTUM
		3	DETERMINATION OF POINT BASED LIQUEFACTION POTENTIAL FOR KARŞIYAKA DISTRICT OF İZMIR PROVINCE	Dr., ESRA GÜNERİ
		4	APPLICATION FIELDS OF GEOTECHNICAL ENGINEERING AND IMPORTANCE IN CIVIL ENGINEERING	Dr., ESRA GÜNERİ
		5	ROCK FRAGMENTATION IN TUNNELLING WITH LOADING AND UNLOADING CYCLES IN DYNAMIC DISC TECHNOLOGY	Prof. Dr. Nazife Erarslan
		6	INVESTIGATION OF THE EFFECT OF CRUSHED ZONE FORMATION WITH SHARP AND BLUNT TYPE BITS ON DRILLABILITY IN DEEP DRILLING	Prof. Dr. Nazife Erarslan

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HALL / SALON 5	**Prof. Dr. ALİ BİLGİLİ Prof. Dr. BAŞAK HANEDAN**	1	GIDA GÜVENCESİ VE GIDA SİSTEMLERİ	Dr. Öğr. Üyesi, NİLGÜN ÖNCÜL
		2	IMPACTS OF LIFE CYCLE ANALYSIS IN THE FOOD INDUSTRY	Dr. Gamze KOR SIMSEK Prof. Dr. Filiz ICIER
		3	EAR INFLAMMATION IN CATS AND TREATMENT OPTIONS	Prof. Dr. ALİ BİLGİLİ Prof. Dr. BAŞAK HANEDAN
		4	BACTERIAL VACCINES IN SHEEP AND GOATS	Prof. Dr. İsmail Aytekin
		5	VIRAL VACCINES IN SHEEP AND GOATS	Prof. Dr. İsmail Aytekin
		6	ÇİFTLİK HAYVANLARI İÇİN SELENYUM KATKILARININ DEĞERLENDİRİLMESİ	Nuri ALKAN Doç.Dr. Habip MURUZ
		7	RUMİNANT ETİNİN FONKSİYONEL YAĞ ASİTLERİ İÇERİĞİNİ İYİLEŞTİREN BESLEME YAKLAŞIMLARI	Nuri ALKAN Doç.Dr. Habip MURUZ

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HALL / SALON 6	**Doç.Dr. ELİF ÇAĞDA KANDEMİR**	1	DISASTER RISK ASSESSMENT OF URBAN TRANSFORMATION PROJECT AREAS: THE CASE OF KAHRAMANMARAŞ	Lecturer. Dr. Sıtkı Alper ÖZDEMİR Prof. Dr. Mustafa Tolga ÇÖĞÜRCÜ Res. Asst. Mehmet Akif ARSLAN Asst. Prof. Dr. Mustafa ONÜÇYILDIZ
		2	USE OF INNOVATIVE TECHNOLOGIES IN CONSTRUCTION OCCUPATIONAL HEALTH AND SAFETY	Res. Asst. Mehmet Akif ARSLAN Prof. Dr. Mustafa Tolga ÇÖĞÜRCÜ Lecturer. Dr. Sıtkı Alper ÖZDEMİR Asst. Prof. Dr. Mustafa ONÜÇYILDIZ
		3	SEISMIC DAMAGE TO ADJACENT STRUCTURES: A HISTORICAL PERSPECTIVE	Doç.Dr. ELİF ÇAĞDA KANDEMİR
		4	INSIGHTS INTO THE RESPONSE OF NEIGHBORING BUILDINGS	Doç.Dr. ELİF ÇAĞDA KANDEMİR
		5	SUSTAINABLE ARCHITECTURE IN THE MEDITERRANEAN BASIN: COMPARATIVE INSIGHTS INTO VERNACULAR PRACTICES IN ALBAICÍN AND KALEİÇİ	Architect, BESTE TAŞ Assoc. Prof., GÖKHAN UŞMA
		6	WATER RECYCLING IN SUSTAINABLE HOUSING AND ITS IMPACT ON DESIGN	Architect Fatma Tuba YILDIRIM Assoc. Prof. Dr. Gökhan UŞMA

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HALL / SALON 7	**Prof. Dr. W. Thammarat,**	1	ENHANCING SUSTAINABILITY THROUGH ADAPTIVE SYSTEM ARCHITECTURES	Maria Sanchez, Arjun Desai, Lingwei Zhou, Natalia Popova
		2	ESTABLISHING A COMPREHENSIVE ASSESSMENT FRAMEWORK FOR BUILDING COMPONENT SUSTAINABILITY"	Elena Kovalevskaya, Dimitrios Xenopoulos, Esha Sharma, Jian Li, Henrietta Lefèvre
		3	ADAPTIVE RESILIENT ARCHITECTURE: STRATEGIES FOR FLOOD MITIGATION	Ravi K. Sharma, Mei Lin Wei
		4	BETWEEN TADAO ANDO AND CHARLES CORREA: AN ‘AFFINITARIAN’ ARCHITECTURAL INQUIRY	Rina Sato
		5	INNOVATIVE DESIGN OF ADAPTIVE TEMPORARY SHELTERS FOR DISPLACED COMMUNITIES	A. Jamsran, T. Davaajargal, E. Erdene, K. Sukhbaatar, L. Amarsanaa, B. Bat-Erdene, N. Bold, D. Ganbold
		6	STRATEGIC APPROACHES TO FINANCING AFFORDABLE HOUSING IN EMERGING ASIAN ECONOMIES	Amir Khan, Nguyen Thi Lan Huong
		7	RETHINKING ARCHITECTURE FOR A SUSTAINABLE FUTURE: INTEGRATIVE APPROACHES IN THE AGE OF CLIMATE CRISIS	Ayanthi Perera, Assis. Prof. Dr. Wei Ming Zhu
		8	DESIGN RECOMMENDATIONS FOR INCLUSIVE HOUSING TO MEET DIVERSE ACCESSIBILITY NEEDS	L. Nakamura, S. Gupta, J.-H. Kim, M. Rizwan
		9	ASSESSMENT OF FIRE HAZARDS ASSOCIATED WITH FUEL STATIONS AND LAND-USE PLANNING CONSIDERATIONS IN CHIANG MAI, THAILAND	P. Sukjai, Prof. Dr. W. Thammarat, L. Noppakun

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HALL / SALON 8	**Assis. Prof. Dr. Haruto Tanaka,**	1	REINTERPRETING PERSPECTIVE: THE REVIVAL OF SPATIAL REPRESENTATION IN RENAISSANCE ITALY	Lila Tanaka, Amir Rashid, and Hiroshi Nakamura
		2	EVALUATING PEAK DEMAND PROJECTIONS FOR OFFICE BUILDINGS UTILIZING EQUEST	Yuki Tanaka, Aisha Kim, Chen Wei, Amir S. Ahmad
		3	FRAMEWORK DEVELOPMENT FOR DIGITAL TWINS IN THE BUILT ENVIRONMENT	Mei Zhang, Hiroshi Tanaka, Ayesha Khan,
		4	INFLUENCING FACTORS FOR ADOPTING SUSTAINABLE CONSTRUCTION PRACTICES IN ASIAN RESIDENTIAL DEVELOPMENT	Haruto Yamamoto, Aisha Rahman, Li Wei, Siti Noor
		5	ADAPTING SPATIAL DESIGN TO PANDEMIC CHALLENGES: A FRAMEWORK FOR FUTURE RESILIENCE	Prof. Dr. Amina Khosravi, Mei Lin Zhang
		6	THE RISE OF CONSTRUCTION SYNDICATES IN SOUTH AFRICA: CONSEQUENCES FOR THE CONSTRUCTION SECTOR	Aisha Khan, Rajiv Mehta, Lin Chen
		7	STRATEGIES FOR ACHIEVING ENERGY SUSTAINABILITY IN MODERN ENTERPRISES	Mei Lin Zhang, Assis. Prof. Dr. Haruto Tanaka, Amina K. Rahman,
		8	FUNDING SUSTAINABLE INITIATIVES: A STUDY ON CROWDFUNDING FOR ECO-FRIENDLY PROJECTS IN AZERBAIJAN	Aydin Mammadov, Leyla Aliyeva, Rauf Hasanov, Fidan Aliyeva, Tural Jafarov
		9	EXPLORING CROWDFUNDING OPPORTUNITIES FOR SUSTAINABLE PROJECTS IN SAUDI ARABIA	Farah Alqurashi, Nasser Alzahrani, Lina Alshahrani, Saif Alharbi, Nour Alharthi, Omar Alghamdi

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HALL / SALON 9	**Prof. Dr. Dwi Anggoro,**	1	PATHWAYS TO ACHIEVING NET ZERO ENERGY IN OFFICE SPACES: A RETROFIT CASE STUDY FOR TROPICAL CLIMATES	Siti A. Rahman, Prof. Dr. Budi S. Nugroho
		2	ANALYSIS OF ELECTRON DENSITY ANOMALIES IN ENERGY METABOLISM ENZYMES	Dimas Setiawan, Intan R. Kartika
		3	UTILIZATION OF ARTIFICIAL INTELLIGENCE FOR IDENTIFYING POTENTIAL BIOMARKERS IN BREAST CANCER	Prof. Dr. Dwi Anggoro, Dr. Putri Sari, Rahmat Hidayat
		4	DEVELOPMENT OF A BIOMIMETIC SALTWATER BATTERY UTILIZING ELECTROCHEMICAL PROPERTIES OF BIOLOGICAL SYSTEMS	Maria Santos, Juan dela Cruz, and Leila Reyes
		5	ENHANCING GENE NAME DETECTION FROM BIOLOGICAL PATHWAY ILLUSTRATIONS USING SIAMESE NETWORKS	Juan Dela Cruz, Maria Santos, Enrique Villanueva, Angela Reyes, Roderick Lim
		6	FRAMEWORK FOR ASSESSING INFORMATION DYNAMICS IN LIVING ORGANISMS	Alina S. Zhanabayev, Nurzhan A. Askarov
		7	IMPACT OF SILVER NANOPARTICLES ON RRNA MATURATION GENES IN SACCHAROMYCES CEREVISIAE	Aisulu Kairbekova, Yerbolat Zhanbotaev

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HALL / SALON 10	**Prof. Dr. Stefan Jovanović**	1	ASSESSMENT OF ARCOBACTER AND HELICOBACTER PYLORI CONTAMINATION IN FRESH ORGANIC VEGETABLES: A CULTURAL AND MOLECULAR APPROACH	Nikola Marković, Assoc. Prof. Milica Petrović, Prof. Dr. Stefan Jovanović
		2	ACCELERATED DATA PROCESSING FOR SINGLE-CELL CHROMATIN ACCESSIBILITY USING HIGH-THROUGHPUT SEQUENCING	Milica Jovanović, Stefan Petrov
		3	INTEGRATING SEMANTIC LEXICAL INSIGHTS INTO CNN ARCHITECTURE FOR DIAGNOSING PEDIATRIC DISEASES	Marko Petrovic, Ana Jovanovic, Nikola Milic,
		4	DYNAMICS OF LAGRANGIAN COHERENT STRUCTURES IN THE WAKE OF SWIMMING NEMATODES	Marko Jovanović, Ana Petrović, Stefan Radosavljević
		5	THE FUNDAMENTAL PRINCIPLES OF EVOLUTIONARY FORCES: GENE ENGINEERING THROUGH SYNTHETIC EVOLUTIONARY INTELLIGENCE	A. J. Kovács, M. T. Szabó
		6	RADIOPROTECTIVE PROPERTIES OF SILVER NANOPARTICLES DERIVED FROM CHLOROPHYTUM BORIVILLIANUM AGAINST GAMMA RADIATION-INDUCED TESTICULAR DAMAGE IN SWISS ALBINO MICE	László Szabó, Anna Tóth, Zoltán Kovács
		7	IMPACT OF VERMICOMPOST FROM COW MANURE TREATED WITH BEETLE LARVAE AND WORM SPECIES ON AGRICULTURAL YIELD	Dr. Zsófia P. Kovács, Assis. Prof. Dr. Gábor T. Székely
		8	PHYLOGENETIC ANALYSIS OF NYMPHAEA SPECIES BASED ON 18S RDNA SEQUENCES	L. Petrović, M. Šimunić,
		9	ASSESSMENT OF POTATO VIRAL INFECTIONS VIA DAS-ELISA IN CROATIA	Marko Jurić, Ivana Novak,

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HALL / SALON 11	**Prof. Dr. Rajiv Mehta**	1	DUAL PRODUCTION OF EICOSAPENTAENOIC ACID AND FUCOXANTHIN FROM COLD-RESILIENT DIATOM STRAINS	Aarav Kumar, Sneha Mehta, Raghav Sharma, Priya Verma
		2	BIOPROPHYLAXIS OF SAPROLEGNIASIS IN INCUBATED CLARIAS GARIEPINUS EGGS USING PYOCYANIN EXTRACTED FROM PSEUDOMONAS AERUGINOSA ,	Dr. A. S. Kumar, Dr. R. N. Verma
		3	INNOVATIVE UAS APPLICATIONS FOR FOREST FIRE DETECTION AND 3D FUEL ASSESSMENT	Dr. Ravi Sharma, Arjun Singh
		4	RESEARCH TRENDS IN WILDFIRE MANAGEMENT PRACTICES IN MEDITERRANEAN CLIMATE ZONES .	Aarav Singh, Prof. Dr. Meera Patel
		5	MICROBIAL CONTAMINANTS IN DRINKING WATER ACROSS DIFFERENT STATES OF INDIA	Dr. Anaya Sharma, Prof. Dr. Rajiv Mehta, Priya Singh
		6	ASSESSMENT OF MICROBIAL CONTAMINATION IN DRINKING WATER ACROSS VARIOUS REGIONS OF INDIA	Dr. Ramesh Kumar Patel, Dr. Anjali Sharma, Vikas Singh
		7	UNDERSTANDING FARMERS' ATTITUDES AND CAPABILITIES IN USING HOUSEHOLD SEWAGE SLUDGE AS ORGANIC FERTILIZERS FOR PERI-URBAN AGRICULTURE IN TASHKENT, UZBEKISTAN	Dr. Azamat Qodirov, Prof. Dr. Shahnoza Nurmatova, Dilshodbek Karimov, Dr. Saida Abdullaeva
		8	REGRESSION ANALYSIS OF CHLORODIFLUOROMETHANE (HCFC-142B) CONCENTRATION TRENDS USING THE LEAST SQUARES METHOD	Dr. Ahmadbek Iskandarov, Prof. Dr. Gulnara Yusupova, Riza Shodmonov, Elvira Makhmudova
		9	INVESTIGATION OF EPIGENETIC ALTERATIONS INDUCED BY ALPHA-PARTICLES IN DROSOPHILA MELANOGASTER	Dr. Zainab M. Biyasheva, Prof. Dr. Mukhtar Zh. Tleubergenov,

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Salon	Moderator		Bildiri No ve Başlığı / Paper ID and Title	Authors
HALL / SALON 12	**Prof. Dr. Malikbek Tashkentov,**	1	TAXONOMIC INSIGHTS AND FAUNISTIC ASSESSMENT OF THE GENUS TRIASPIS HALIDAY, 1835 (HYMENOPTERA: BRACONIDAE: BRACHISTINAE) IN UZBEKISTAN	Dr. Zafarbek Khamidov, Ms. Nodira Murodova, Prof. Dr. Abdulazizbek Nuriddinov
		2	EXPLORATION OF BIODIVERSITY IN USEFUL PLANT FAMILIES IN UZBEKISTAN	Professor Azamatov Bahodir, Dr. Zainiev Dilshod, Assistant Professor Mirzaeva Sitora
		3	ECONOMIC IMPACT AND YIELD ASSESSMENT OF GRAFTED TOMATO VARIETIES USING SOLANUM TORVUM AS ROOTSTOCK	Dr. Azizbek Tursunov, Fatima Suyunova, Prof. Dr. Malikbek Tashkentov, Shahnoza Ismoilova
		4	QUANTITATIVE AND FOURIER TRANSFORM INFRARED ANALYSIS OF SAPONINS IN THREE PAKISTANI RUELLIA SPECIES: RUELLIA PROSTRATA, RUELLIA LINEARI-BRACTEOLATA, AND RUELLIA BIGNONIIFLORA	Dr. Aisha M. Khan, Prof. Dr. Ahmed R. Zafar, Dr. Sara L. Qureshi, Mr. Bilal S. Ahmed, Dr. Fatima Z. Malik
		5	DYNAMIC INTERACTIONS OF LEAF CARBON, NITROGEN, AND PHOSPHORUS WITH CLIMATIC INFLUENCES ACROSS DIVERSE ECOSYSTEMS	Dr. Amina Shah, Prof. Dr. Faisal Malik, Dr. Zara Khan
		6	COMPARATIVE ANALYSIS OF LEAF PHENOLOGY AND SEEDLING GROWTH IN QUERCUS SUBER L., QUERCUS CANARIENSIS WILLD., AND THEIR HYBRID QUERCUS AFARES POMEL	Dr. Aisha Khan, Prof. Dr. Bilal Ahmad, Ms. Sara Malik, Dr. Zainab Iqbal, Omar Raza, Dr. Asad Noor
		7	IMPACT OF PHYSICAL ACTIVITY ON REPRODUCTIVE PERFORMANCE AND SEMEN CHARACTERISTICS IN SAHIWAL BULLS	Dr. Aamir Hussain, Prof. Dr. Fatima Noor, Bilal Khan
		8	ASSESSMENT AND CLASSIFICATION OF HERITAGE TREES: A KENYAN PERSPECTIVE	Dr. Amani Ndungu, Prof. Dr. Jane Karanja, Mr. David Kamau
		9	EVALUATING THE CURRENT STATE AND FARMERS' PERCEPTIONS OF AGROFORESTRY IN NYERI, KENYA	Dr. J. Mwangi Prof. Dr. L. Karanja A. Ochieng Ms. S. Akinyi R. M. Ndung'u
		10	FUNGAL PATHOGENS IMPACTING THE DECLINE OF ACACIA NILOTICA AND EUCALYPTUS CAMALDULENSIS IN KENYA	Prof. Dr. J. Mwangi, Dr. P. Karanja, A. Nyaga, M. Wamuyu, Dr. L. Ndung'u, Ms. S. Odhiambo, Mr. K. Ochieng

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HALL / SALON 1	Doç. Dr., BEYZA ERKOÇ	1	ENGELLİLERDE SOSYAL DIŞLANMA	Doç. Dr., BEYZA ERKOÇ
		2	GÖÇLER, KADINLAR ve SOSYAL HİZMET	Doç. Dr., BEYZA ERKOÇ
		3	NADİR HASTALIKLAR VE SOSYAL HİZMET	Doç. Dr., BEYZA ERKOÇ
		4	SOSYAL MEDYA VE ÇOCUK HAKLARI	Doç. Dr., BEYZA ERKOÇ
		5	AN OVERVIEW OF EMOTION-FOCUSED THERAPY-BASED GROUP INTERVENTION PROGRAMS IN THESES IN TURKEY	PhD Student Ebru ÇANAKÇI UĞUR Prof. Dr. Fulya YÜKSEL ŞAHİN
		6	OKUL ÖNCESİ DÖNEM ÇOCUKLARDA SALDIRGANLIK DAVRANIŞI İLE EBEVEYN TUTUMLARI ARASINDAKİ İLİŞKİ	Yüksek Lisans Öğrencisi, Gülay ÇOBAN Dr. Öğr. Üyesi Özlem YILMAZ DEMİREL
		7	INVESTIGATION OF THE LEVEL OF HAPPINESS AND PSYCHOLOGICAL RESILIENCE IN SPORTS SCIENCE STUDENTS AND OTHER INDIVIDUALS	Prof. Dr. Hakkı ULUCAN Doç. Dr. Hayati ARSLAN Sevim KIR
		8	AN ASSESSMENT OF DEPRESSION LEVELS AMONG PHYSICAL EDUCATION AND SPORTS TEACHING STUDENTS	Arş. Gör. Dr. AYKUT ŞAHİN Prof. Dr. YUNUS EMRE KARAKAYA
		9	INVESTGATION OF FUTURE-ORIENTED ATTITUDES OF PHYSICAL EDUCATION AND SPORTS TEACHER CANDIDATES	Arş. Gör. Dr. AYKUT ŞAHİN Prof. Dr. YUNUS EMRE KARAKAYA

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HALL / SALON 2	**Dr.Öğr.Üyesi MEHMET SALİH TAN Dr.Öğr.Üyesi EBRU YILDIRIM**	1	YOĞUN BAKIM ÜNİTESİNDE TELE-TIP UYGULAMALARI	Pınar AYVAT Başak YAVUZ Nurbanu SEZAK
		2	AVRUPA'DA DİŞ HEKİMLİĞİ EĞİTİMİ	Taylan ÇETİNER Pınar AYVAT Gülşah ŞEHİTOĞLU ALPAĞUT
		3	FACTORS AFFECTING NURSES' PERSPECTIVES ON PATIENT PRIVACY IN SURGICAL CLINICS	Res. Assist. Dr. Hatice Eda YOLTAY Prof. Dr. Meryem YAVUZ van GIERSBERGEN
		4	VIEWS OF NURSES WORKING IN SURGICAL CLINICS ON DEATH AND EUTHANASIA	Res. Assist. Dr. Hatice Eda YOLTAY Prof. Dr. Meryem YAVUZ van GIERSBERGEN
		5	THE RELATIONSHIP BETWEEN COGNITIVE STATUS, DEPRESSION LEVEL AND FEAR OF FALLING WITH THE QUALITY OF LIFE IN THE ELDERLY AT HOME	Dr.Öğr.Üyesi MEHMET SALİH TAN Dr.Öğr.Üyesi EBRU YILDIRIM
		6	THE EFFECT OF CYBERCHONDRIA SEVERITY LEVEL ON TRADITIONAL ALTERNATIVE MEDICINE	Öğr. Gör Furkan KARAHÜSEYİNOĞLU Doç. Dr. Muhammet DÜŞÜKCAN
		7	ADÖLESANLARA YÖNELİK AFET OKURYAZARLIĞI: BİR ÖLÇEK GELİŞTİRME ÇALIŞMASI	Doç. Dr. Hasret Yalçınöz Baysal Dr. Öğr. Üyesi Nihan Türkoğlu Doktora öğrencisi Saadet Güzel
		8	ADLİ ALANDA ÇALIŞACAK OLAN ÖĞRENCİLERİN ADLİ BİYOLOJİK ANALİZLER KONUSUNDAKİ BİLGİ DURUMLARININ ÖLÇÜLMESİ	Yüksek Lisans Öğrencisi, ZEYNEP DOĞAN Doçent Doktor, DEMET TATAR

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HALL / SALON 3	**Assoc. Prof. Dr., URKIYE AKAR TARIM**	1	Potansiyel biyoaktif tiyeno[2,3-c]pirol-5(6H)-karboksamit türevlerinin sentezi	Yüksek Lisans Öğrencisi Hazal ÜZMEZLER ORTA Prof. Dr. Gani KOZA
		2	THE HISTORICAL DEVELOPMENT OF PHOTODETECTORS	Yüksek Lisans Öğrencisi Serkan YÜCEL Prof. Dr. Nilgün KALAYCIOĞLU ÖZPOZAN
		3	ONE POT ETHANOL CATALYIC ACTIVITY: EFFECT OF RU LOADING ON CERIUM-TITANIUM DİOXİDE (CE-TIO 2) SUPPORT	Dr. Ugur Caglayan Assoc. Prof. Dr. Bahar Meryemoglu
		4	RESEARCH ON SOME LIQUIDS SUBSTITUTE OF CORTICAL BONE: GAMMA RAY ENERGY DEPOSITION STUDIES	Assoc. Prof. Dr., URKIYE AKAR TARIM

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HALL / SALON 4	**Dr. Öğr. Üyesi ALİ ÇİÇEK**	1	AVRUPA ÜLKELERİNDE MÜFETTİŞ SEÇİM VE YETİŞTİRME SÜREÇLERİ: TÜRKİYE İLE KARŞILAŞTIRMALI BİR İNCELEME	EMİNE DENİZ İĞDELİ Doç. Dr. NESLİN İHTİYAROĞLU
		2	CENİNİN VE DONDURULMUŞ EMBRİYONUN MİRASÇILIĞI	Yüksek Lisans Öğrencisi, ZELİHA AYDIN Yüksek Lisans Öğrencisi, ÜMRAN BOZKUŞ ARAÇ
		3	BASIC PRINCIPLES OF THE RIGHT TO REASONED DECISION IN CRIMINAL PROCEDURE JUDICIAL DECISIONS IN THE LIGHT OF THE DECISIONS OF THE ECHR	Öğr. Gör., Zeynep Büşra KORKMAZ
		4	CITIZEN PARTICIPATION IN URBAN POLITICS: THE ROLE OF LOCAL GOVERNMENTS IN THE DEMOCRATISATION PROCES	Dr. Öğr. Üyesi ALİ ÇİÇEK
		5	LIBERAL DEMOCRACY vs. DELIBERATIVE DEMOCRACY: BALANCING REPRESENTATION AND PARTICİPATION IN MODERN GOVERNANCE	Dr. Öğr. Üyesi ALİ ÇİÇEK
		6	İFADE ÖZGÜRLÜĞÜ HAKKI BAĞLAMINDA ÖZGÜR İRADEYE TEHDİT OLARAK YAPAY ZEKA SİSTEMLERİ	Bilal Kapısız
		7	THE ASSIMILATION EXPERIENCE OF THE TURKISH MINORITY IN GREECE AND ITS SOCIETAL IMPLICATIONS	Dr. Rejhan RAHMAN

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HALL / SALON 5	**Prof.Dr.Seyit TAŞER**	1	BOARDING SCHOOLS AND CULTURAL GENOCIDE IN EAST TURKESTAN: THE TRANSFORMATION OF UYGHUR IDENTITY	Dr. Adilcan ERUYGUR
		2	CHINA'S NEW EDUCATION CURRICULUM AND THE UYGHUR EDUCATION SYSTEM: IDENTITY, LANGUAGE AND ASSIMILATION IN EDUCATION	Dr. Adilcan ERUYGUR
		3	DETERMINATION OF BURNOUT AND SOCIAL SUPPORT LEVELS OF SPECIAL EDUCATION TEACHERS	Teacher. Fatmagül GÜNAYDI Assoc. Prof. Dr. Müzeyyen ELDENİZ ÇETİN
		4	EĞİTİM TARİHİNDE ELE ALINAN BİR MESELE OLARAK MEMUR-ÖĞRETMENLİK	Prof.Dr.Seyit TAŞER
		5	EĞİTİMDE YAPAY ZEKA İLE HAZIRLANAN SUNUMLARIN DEĞERLENDİRİLMESİ- OSMANLI TARİHİ DERSİNDEN BİR ÖRNEK	Prof.Dr.Seyit TAŞER
		6	İLKÖĞRETİM 8. SINIF FEN BİLİMLERİ DERSİ ÖĞRETİM PROGRAMININ CIPP MODELİNE GÖRE DEĞERLENDİRMESİ	Yüksek Lisans Öğrencisi, Maviş Melis GÜLYAZ Prof. Dr., ŞENEL ELALDI
		7	CROSS-SECTIONAL EXAMINATION OF THE CHANGES IN TEACHER CANDIDATES' COMPREHENSION LEVELS REGARDING THE CONCEPTS OF SIZE AND DISTANCE	DURSUN ÖZGÖKMEN Prof. Dr. HÜSEYİN KALKAN

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HALL / SALON 6	**Prof. Dr. Aissatou Sow,**	1	ASSESSING FOREST FIRE RISKS IN THE ABERDARE FOREST REGION OF KENYA: A REMOTE SENSING AND GIS APPROACH	Dr. Michael Waweru, Prof. Dr. Amani Kibera
		2	THE ROLE OF YOUTH IN THE CONSERVATION OF FORESTS AND PROTECTED AREAS IN SOUTH ASIA	Dr. Émilie Lefevre, Prof. Dr. Jean-Pierre Martin
		3	SEASONAL ASSESSMENT OF MINING IMPACT ON THE GA-SELATI RIVER QUALITY IN LIMPOPO PROVINCE, SOUTH AFRICA	Dr. Amina M. Mohamed, Prof. Dr. Hassan K. Elhadi, Rania A. Ali
		4	INVESTIGATING TREE GROWTH FACTORS AFFECTING CARBON SEQUESTRATION AMID CLIMATE CHANGE CHALLENGES	Dr. A. S. Ndour, Prof. Dr. M. C. Sow
		5	COMPARATIVE ANALYSIS OF MECHANIZATION TECHNIQUES FOR WEED MANAGEMENT IN THE ARTIFICIAL REGENERATION OF FAGUS ORIENTALIS	Dr. Amadou Diouf, Prof. Dr. Aissatou Sow, Ibrahim Ndiaye
		6	SEASONAL IMPACTS ON TERMITE INFESTATION OF BEEKEEPING HIVES IN DAKAR, SENEGAL	Dr. M. B. Ndiaye, Prof. Dr. S. F. Diallo, A. T. Mbaye B.
		7	MATHEMATICAL MODELING OF FOREST RESOURCE DEPLETION: IMPACTS OF SYNTHETIC INDUSTRIES	Dr. Sophie Dupont, Prof. Dr. Julien Moreau, Clara Van der Meer
		8	NITROGEN DYNAMICS IN A FORESTED HEADWATER STREAM IN BELGIUM	Dr. Elise Dupont, Prof. Dr. Laurent Moreau, Dr. Amélie Gérard
		9	A COMPARATIVE STUDY OF LAND USE MANAGEMENT IN HOKKAIDO, JAPAN	Dr. Abebe Tadesse, Prof. Dr. Amina Gebre, Solomon Mulu

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HALL / SALON 7	**Dr. Samuel Desta, Prof. Dr. Amira Hailu**	1	IMPACT OF MOLTEN BATH COMPOSITION ON HOT-DIP ALUMINIZING OF AISI 4140 STEEL	Dr. Samuel Desta, Prof. Dr. Amira Hailu
		2	CARBON-BASED COPPER OXIDE ELECTROCATALYST FOR ANODIC REACTIONS IN VANADIUM REDOX FLOW BATTERIES	Dr. Abebe Tadesse, Meskerem Admasu, Prof. Dr. Fikreab Tsegaye
		3	TRIBOLOGICAL PERFORMANCE OF WOOD-PLASTIC COMPOSITES AGAINST UNCOATED CEMENTED CARBIDE	Dr. Yared Tesfaye, Prof. Dr. Selamawit Kassa
		4	FIRST-PRINCIPLE ANALYSIS OF ELECTRONIC PROPERTIES AND DIELECTRIC RESPONSE OF ZNIN2SE4 AND ZNIN2TE4	Dr. Aarav S. Joshi, Prof. Dr. Neha K. Verma
		5	OPTIMIZATION OF TIRE VULCANIZATION PARAMETERS THROUGH TAGUCHI EXPERIMENTAL DESIGN	Dr. Amina Mbala, Prof. Dr. Thabo Ndlovu, Imani Kone
		6	ENHANCED PERFORMANCE OF ELECTROSTATIC FILTER MEMBRANES FOR ADVANCED FILTRATION APPLICATIONS	Dr. Amina Kamara, Prof. Dr. Idris Sow, Fatou Jallow
		7	GREEN SYNTHESIS AND CHARACTERIZATION OF ZINC OXIDE NANOPARTICLES USING MORINGA OLEIFERA LEAF EXTRACT	Dr. Amina Mohammed, Prof. Dr. Kwame Nkrumah, Dr. Zainab El-Amin, Tunde Adewale
		8	UPCYCLING AUTOMOTIVE TEXTILE WASTE: DEVELOPMENT OF RECYCLED PET/PP BLENDS FOR FURNITURE EDGE BANDING APPLICATIONS	Dr. Amina Diallo, Prof. Dr. Malik Ndoye, Fatou Bintou, Dr. Ousmane Sow

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HALL / SALON 8	**Prof. Dr. Mohammad Javad Sadeghi**	1	INVESTIGATION OF AMMONIA ADSORPTION CHARACTERISTICS OF METAL CHLORIDE-ENHANCED COMPOSITE CARRIERS	Authors: Dr. Amina Diallo, Prof. Dr. Samuel Nkrumah, Ms. Fatoumata Keita
		2	DEVELOPMENT AND CHARACTERIZATION OF PVA/MMT NANOCOMPOSITES FOR ENHANCED BIOMEDICAL APPLICATIONS	Dr. Amina Sylla, Prof. Dr. Idris Kamara, Dr. Fatoumata Diallo, Dr. Mamadou Ba,
		3	CHARACTERIZATION OF PRECIOUS AND SEMI-PRECIOUS STONES FROM THE BAM HISTORICAL CITADEL USING MICRO-RAMAN SPECTROSCOPY	Dr. Mohammad Reza Naderi, Prof. Dr. Sara Jalali, Nazli Darkhal
		4	EVALUATING THE EFFICIENCY OF MICROENCAPSULATED PHASE CHANGE MATERIALS IN FOOD PRESERVATION	Dr. Amir Hossein Sharifi, Fatemeh Nazari, Prof. Dr. Mohammad Reza Jafari
		5	CO2 RECOVERY FROM FLUE GAS AND ITS CONVERSION TO METHANOL THROUGH A THREE-STEP PROCESS	Dr. Amir Hossein Zare, Prof. Dr. Fatemeh Rahimi, Dr. Mohammad Javad Alizadeh,
		6	DEVELOPMENT OF ECO-FRIENDLY WOOD ADHESIVES USING MIMOSA TANNIN AND CORNSTARCH	Dr. Ahmad Reza Shams, Prof. Dr. Leyla Moradi, Fatemeh Jafari
		7	MECHANICAL CHARACTERIZATION OF DATE PALM FLOUR AND BIOPOLYPROPYLENE COMPOSITES COMPATIBILIZED WITH PP-G-IA	Dr. Ali Rezaei, Prof. Dr. Fatemeh Mohammadi, Dr. Amir Hossein Ghasemi, Prof. Dr. Mohammad Javad Sadeghi

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HALL / SALON 9	**Prof. Dr. Marco Rossi,**	1	DEVELOPMENT AND CHARACTERIZATION OF A HIGH-EFFICIENCY HONEYCOMB CERAMIC HEATER WITH CONDUCTIVE COATING	Dr. Amir Hossein, Prof. Dr. Fatemeh Jafari, Ali Rezaei, Dr. Sara Mohammadi
		2	UTILIZATION OF ORGANIC SEMICONDUCTOR MATERIALS IN THE DEVELOPMENT OF FLEXIBLE PHOTOVOLTAIC DEVICES	Dr. Elena Petrova, Prof. Dr. Marco Rossi,
		3	DURABILITY ASSESSMENT OF RECYCLED POLYPROPYLENE COMPOSITES REINFORCED WITH FLAX FIBERS	Dr. Emma Jensen, Prof. Dr. Lukas Schmidt, Dr. Claudia Müller, Prof. Dr. Erik Van den Broeck
		4	IMPACT OF COMMONLY CONSUMED ACIDIC BEVERAGES ON THE SURFACE INTEGRITY OF ORTHODONTIC COMPOSITE MATERIALS	Dr. Elena Petrov, Prof. Dr. Marco Rossi
		5	ENHANCEMENT OF SILICON SOLAR CELL PERFORMANCE THROUGH OPTIMIZED ANTI-REFLECTIVE COATINGS	Dr. Emilia Novak, Prof. Dr. Lukas Müller, Janek Petrov
		6	INNOVATIONS IN CARBON MATERIALS FOR SUSTAINABLE ENERGY SOLUTIONS	Dr. Elena Novak, Prof. Dr. Antonij Petrov,
		7	ENHANCING TENSILE STRENGTH AND DUCTILITY OF TANBHFZRTI REFRACTORY HIGH ENTROPY ALLOYS THROUGH REVERSE ROLLING	Dr. Elena Petrov, Prof. Dr. Marko Ivanovic, Dr. Anna Schmidt
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HALL / SALON 10	**Prof. Dr. Lukas Schmidt,**	1	ENHANCING PATIENT-CENTRIC HEALTHCARE THROUGH DIGITAL ENGAGEMENT STRATEGIES	Dr. Anna Müller, Prof. Dr. Lukas Schmidt, Dr. Sarah Weiss, and Dr. Peter Hoffmann
		2	ASSESSING THE IMPACT OF LEADERSHIP STYLES ON HEALTHCARE PERFORMANCE IN TEACHING HOSPITALS: A STUDY IN JORDAN	Dr. Leila Al-Husaini, Prof. Dr. Ahmad Al-Masri, Dr. Sara Jaber
		3	EARLY ANTENATAL CARE VISITS AMONG WOMEN OF REPRODUCTIVE AGE: A MULTILEVEL ANALYSIS IN JORDAN	Dr. Layla Al-Mansour, Prof. Dr. Ahmad Al-Sharif, Ms. Fatima Zaidan, Dr. Omar
		4	OCCUPATIONAL HEALTH RISKS AMONG MEDICAL PERSONNEL AND CONTRIBUTING FACTORS IN PUBLIC HOSPITALS, BEIRUT-LEBANON	Dr. Layla Nasser, Prof. Dr. Omar El-Khoury, Dr. Sara Haddad
		5	EXAMINING DENTAL MALPRACTICE IN COMPLIANCE WITH ETHICAL STANDARDS	Dr. Ahmed Al-Mansour, Dr. Layla Rahim, Prof. Dr. Nabil Farhat, Dr. Sara Khoury
		6	ASSESSMENT OF KNOWLEDGE AMONG OPERATING ROOM PERSONNEL REGARDING FIRE PREVENTION AND CONTROL IN GOVERNMENT HOSPITALS IN BEIRUT, LEBANON	Dr. Khaled Al-Hariri, Dr. Layla Saad, Hanan Jamal, Dr. Omar Al-Mansoori
		7	INTERACTIVE DIGITAL LEARNING AND EMOTIONAL SUPPORT FOR CHILDREN WITH CHRONIC ILLNESSES	Dr. Zainab Al-Hakim, Prof. Dr. Rashid Al-Sabah, Noor Ahmed
		8	ASSESSMENT OF COVID-19 POSITIVITY RATES AMONG HOSPITALIZED PATIENTS WITH VARYING VACCINATION STATUS: A STUDY FROM KING ABDULAZIZ MEDICAL CITY, SAUDI ARABIA	Dr. Ahmed Al-Mansoori, Dr. Fatima Al-Zahrani, Dr. Omar Al-Badawi, Dr. Layla Al-Hamadi, Dr. Saeed Al-Fahad
			ENHANCING ADVERSE EVENT REPORTING IN IMMUNIZATION: THE IMPACT OF MOBILE TECHNOLOGY IN LEBANON	Dr. Samir El-Hassan, Dr. Layla Kassem, Dr. Nabil Jreige, Ms. Rania Dabbous, Mr. Omar Khalil
		9	DATA-DRIVEN INSIGHTS: ANALYZING MARKET DYNAMICS IN HEALTHCARE FACILITIES	Dr. Mei Lin, Prof. Dr. Kenji Takahashi, Dr. Haruto Nishida, Yumi Sato, Mr. Taro Yamamoto

ISBN NR. : 978-625-6283-85-5

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ISBN NR. : 978-625-6283-85-5

ISBN NR. : 978-625-6283-85-5

ISBN NR. : 978-625-6283-85-5

SOLAR POWER PLANT ELECTRICITY GENERATION FORECASTING USING NONLINEAR AUTOREGRESSIVE NEURAL NETWORK

Şahin YILDIRIM

Erciyes University, sahiny@erciyes.edu.tr - ORCID ID:0000-0002-7149-3274

Mehmet Safa BİNGÖL

Nigde Omer Halisdemir University, msbingol@ohu.edu.tr -ORCID ID:0000-0002-4188-2025

ABSTRACT

The need for renewable energy has emerged due to the depletion of fossil fuels and humanity's search for cleaner energy. The vast majority of countries have been in search of renewable energy sources. In Turkey, the number of research and studies on renewable energy sources has been increasing rapidly in recent years. Turkey's annual sunshine duration is higher than many other countries. Therefore, the interest in solar power plants in Turkey is high. Neural network (NN) models are used in many different fields. One of these areas is the energy sector. NNs are used in applications such as load and price forecasting in the energy sector. In this study, the electricity generation at İkitelli solar power plant is forecasted using Nonlinear Autoregressive Neural Network (NAR-NN). A data set consisting of data from the 1200 kWp solar power plant located in İstanbul İkitelli drinking water treatment plant is used. 1935 data recorded between May 1-31, 2018 are used. The results are evaluated with Mean Squared Error (MSE), R performance metrics and the test set prediction is given graphically.

Keywords: Forecasting, NAR-NN, Power plant.

ISBN NR. : 978-625-6283-85-5

MECHANICAL PERFORMANCE OF BIODEGRADABLE AND METALLIC SCREWS IN FIFTH METATARSAL FRACTURES

Assoc. Prof. Dr. Hamid ASADI DERESHGI
Istanbul Arel University, hamidasadi@arel.edu.tr - 0000-0002-8500-6625
Researcher Dilan DEMIR
Kocaeli University, dilandemir@arel.edu.tr - 0000-0001-7413-1597

ABSTRACT

The fifth metatarsal, positioned laterally in the foot, is crucial for maintaining structural stability and facilitating locomotion. It provides attachment for the peroneus brevis tendon, contributing to lateral foot support and eversion. This significance necessitates a closer examination of the different types of fractures that may arise in this region. Avulsion fractures involve the detachment of a bone fragment due to tendon or ligament forces, typically at the base of the fifth metatarsal. Jones fractures occur at the metaphyseal-diaphyseal junction of the fifth metatarsal, and stress fractures result from repetitive microtrauma, frequently affecting the metatarsal shafts. It is important to note that Jones fractures are notoriously challenging to heal and frequently occur in sports injuries. In metatarsal fractures, the affected foot should be immobilized in a cast with no weight-bearing. Nonetheless, insufficient healing often requires surgical intervention for stabilization using plates and screws. This study examines the mechanical behavior of two screw types used in fifth metatarsal fractures: cannulated screws and intramedullary screws, both 45 mm in length and 4.5 mm in diameter. The research will analyze the mechanical responses to external forces applied to the screws after implantation. Finite element analysis will determine the material properties of titanium and steel, as well as biodegradable materials, to identify optimal screw characteristics and performance. The incorporation of biodegradable materials is intended to promote the gradual dissolution of the screw within the body, minimizing long-term foreign body presence. This research enhances the existing literature by identifying effective screw configurations and materials for treating fifth metatarsal fractures, potentially leading to improved surgical practices and patient recovery.

Keywords: Biomechanics, Fifth Metatarsal, Fracture Treatment, Finite Element Analysis

ISBN NR. : 978-625-6283-85-5

THE FUTURE OF DESALİNATİON İN MERSİN: RENEWABLE ENERGY AND TECHNOLOGY INTEGRATİON

Zeynep KOÇ

Mersin Üniversitesi, zeynepp.kkoc@gmail.com – 0009-00064394-5217

Doç. Dr. Fatih Ünal

Mersin Üniversitesi, fatihunal@mersin.edu.tr – 0000-0001-6660-9984

Abstract

This study comprehensively examines desalination methods as a solution to the global water crisis, which is characterized by increasing water demand and the pollution and depletion of existing water resources. Desalination is a water purification technology that utilizes physical and chemical processes to convert saline water, particularly seawater, into drinking water. Population growth, climate change, and the inadequacy of natural water sources are significant factors threatening water security, especially in arid regions. In this context, the study addresses various desalination methods, detailing the processes, advantages, and disadvantages of each technique, including reverse osmosis, distillation, electrodialysis, and ion exchange. For instance, the reverse osmosis method facilitates the separation of water from salts and contaminants through a semi-permeable membrane, while distillation methods operate by evaporating and condensing water. Electrodialysis uses electric current to separate ions, and ion exchange aims to reduce water hardness and remove specific pollutants. Furthermore, the role of membrane technologies in desalination processes, along with critical factors such as energy efficiency, environmental impacts, and cost considerations, is emphasized. The study highlights the importance of these methods for sustainable water management and security, identifying future research and development needs in this field. Ultimately, it suggests that desalination technologies offer an effective solution to the water crisis and are a vital tool for the sustainable management of water resources.

Keywords: Desalination, Renewable Energy, Technology Integration

Özet

Bu çalışmada, dünya genelinde artan su talebinin ve mevcut su kaynaklarının kirlenmesi ile azalması gibi küresel su krizinin etkilerine yönelik çözüm olarak desalinasyon yöntemleri kapsamlı bir şekilde incelenmiştir. Desalinasyon, tuzlu suyun, özellikle deniz suyunun, içme suyu haline dönüştürülmesi için fiziksel ve kimyasal süreçlerin kullanıldığı bir su arıtma teknolojisidir. Nüfus artışı, iklim değişikliği ve doğal su kaynaklarının yetersizliği, özellikle kurak bölgelerde su güvenliğini tehdit eden önemli faktörlerdir. Bu bağlamda, çalışma çeşitli desalinasyon yöntemlerini ele almakta; ters osmoz, damıtma, elektrodiyaliz, iyon değiştirme

ISBN NR. : 978-625-6283-85-5

gibi yöntemlerin her biri için işlem aşamaları, avantajları ve dezavantajları detaylı bir şekilde açıklanmaktadır. Örneğin, ters osmoz yöntemi, yarı geçirgen bir membran aracılığıyla suyun tuz ve kirleticilerden ayrıştırılmasını sağlarken, damıtma yöntemleri, suyun buharlaştırılması ve yoğunlaştırılması süreci ile çalışır. Elektrodiyaliz, elektrik akımı kullanarak iyonların ayrılmasını sağlarken, iyon değiştirme ise suyun sertliğini azaltma ve belirli kirleticileri giderme amacı taşır. Ayrıca, membran teknolojilerinin desalinasyon süreçlerindeki rolü, enerji verimliliği, çevresel etkiler ve maliyet faktörleri gibi kritik unsurlar üzerinde durulmaktadır. Çalışma, bu yöntemlerin sürdürülebilir su yönetimi ve su güvenliği için ne denli önemli olduğunu vurgulamakta ve bu alanda gelecekteki araştırma ve geliştirme ihtiyaçlarını belirlemektedir. Sonuç olarak, desalinasyon teknolojilerinin, özellikle su krizine karşı etkili bir çözüm sunduğu ve su kaynaklarının sürdürülebilir yönetimi için kritik bir araç olduğu öne sürülmektedir.

Anahtar Kelimeler: Desalinasyon, Yenilenebilir Enerji, Teknoloji Entegrasyonu

ISBN NR. : 978-625-6283-85-5

WAVE ENERGY AND TURKEY: POTENTIAL, APPLICATIONS, AND FUTURE

Zeynep KOÇ

Mersin Üniversitesi, zeynepp.kkoc@gmail.com – 0009-00064394-5217

Doç. Dr. Fatih Ünal

Mersin Üniversitesi, fatihunal@mersin.edu.tr – 0000-0001-6660-9984

Abstract

Wave energy refers to the process of converting the kinetic energy of waves on the surface of seas and oceans into electrical energy. Waves are generated by the influence of wind on the sea surface, carrying kinetic energy. This energy source stands out due to its renewable nature, environmentally friendly characteristics, and capacity for continuous replenishment. Considering the limited resources and environmental impacts of fossil fuels, wave energy presents an important alternative among sustainable energy solutions. Establishing wave energy plants in coastal areas where waves are prevalent is an effective method to harness this potential. This report provides a comprehensive assessment of the advantages, disadvantages, applications, global potential, and the current situation of wave energy in Turkey, highlighting its future role.

Keywords: Wave Energy, Renewable Energy, Sustainability, Energy Potential

Özet

Dalga enerjisi, deniz ve okyanus yüzeyindeki dalgaların hareket enerjisinin elektrik enerjisine dönüştürülmesi sürecini ifade eder. Dalgalar, rüzgârın deniz yüzeyindeki etkisiyle oluşarak hareket enerjisi taşır. Bu enerji kaynağı, yenilenebilir olması, çevre dostu özellikleri ve sürekli yenilenme kapasitesi ile dikkat çekmektedir. Fosil yakıtların sınırlı kaynakları ve çevresel etkileri göz önüne alındığında, dalga enerjisi, sürdürülebilir enerji çözümleri arasında önemli bir alternatif sunmaktadır. Özellikle dalgaların yoğun olduğu kıyı bölgelerinde dalga enerjisi santralleri kurmak, bu potansiyeli değerlendirmek için etkili bir yöntemdir. Bu rapor, dalga enerjisinin avantajları, dezavantajları, kullanım alanları, dünya genelindeki potansiyeli ve Türkiye'deki durumu hakkında kapsamlı bir değerlendirme sunarak, dalga enerjisinin gelecekteki rolünü gözler önüne sermektedir.

Anahtar Kelimeler: Dalga Enerjisi, Yenilenebilir Enerji, Sürdürülebilirlik, Enerji Potansiyeli

ISBN NR. : 978-625-6283-85-5

NUMERICAL MODELLING OF PHOTOVOLTAIC PANELS BY USING MATLAB-SIMULINK

Ceren KARADENIZ[1]

[1]Department of Electrical and Electronics Engineering, Izmir Katip Celebi University, Turkiye, *190403025@ogr.ikc.edu.tr* – 0009-0009-6187-4856

Doç. Dr. Sahin GUNGOR[2]

[2]Department of Mechanical Engineering, Izmir Katip Celebi University, Turkiye, *sahin.gungor@ikcu.edu.tr* – *0000-0003-1833-1484*

ABSTRACT

Photovoltaic (PV) panels harvest the incident solar irradiation to convert it into electricity by the help of solar cells. Numerical modelling of these PV units is crucial to observe the system performance under various environmental conditions. In this study, we modelled the PV panel system by using MATLAB/Simulink. Influences of irradiation and ambient temperature levels on solar panel performance were investigated for the levels of 500 W/m^2, 750 W/m^2, and 1000 W/m^2 irradiance and 25°C - 39°C ambient temperatures. Furthermore, impact of the material permeability was numerically investigated to provide a comprehensive demonstration of how these materials affect solar panel performance. This findings show that the PV panel performance can be increased up to 9.55% by operating at optimal thermal conditions.

Keywords: Solar panels, solar irradiance, numerical PV model, operating temperature.

ISBN NR. : 978-625-6283-85-5

AN EXPERIMENTAL INVESTIGATION ON THE RELATIONSHIP BETWEEN TRANSMITTANCE AND PV PANEL PERFORMANCE

Ceren KARADENIZ[1]

[1]Department of Electrical and Electronics Engineering, Izmir Katip Celebi University, Turkiye, *190403025@ogr.ikc.edu.tr* – 0009-0009-6187-4856

Doç. Dr. Sahin GUNGOR[2]

[2]Department of Mechanical Engineering, Izmir Katip Celebi University, Turkiye, *sahin.gungor@ikcu.edu.tr* – *0000-0003-1833-1484*

ABSTRACT

This study focuses on the impacts of plastic and thin fabric material usage on the surface of a solar panel, and how the transmittance of these materials affect the photovoltaic panel's efficiency. The experiments has been initiated by measuring the open-circuit voltage (V_{OC}) and short-circuit current (I_{SC}) of a small solar panel in full sunlight. Two different plastic materials with different transparencies are consecutively placed on the solar panel, and measurements of open-circuit voltage (V_{OC}) and short-circuit current (I_{SC}) are collected for each material. The data gathered is examined to compare how different materials affect light transmission and efficiency. This study gives useful insights into material selection for photovoltaic system design, resulting in more efficient solar energy utilization through innovative material uses.

Keywords: Solar irradiation, Transmittance, PV panel, Solar performance

ISBN NR. : 978-625-6283-85-5

TEKİL İKİ-ARALIKLI STURM-LİOUVİLLE PROBLEMLERİNİN ÖZDEĞERLERİNİN POZİTİFLİĞİ

Prof., KADRİYE AYDEMİR

Amasya University, kadriyeaydemr@gmail.com.tr - 0000-0002-8378-3949

Prof., OKTAY SH. MUKHTAROV

Tokat Gaziosmanpaşa University, omukhtarov@yahoo.com- 0000-0001-7480-6857

Assis. Prof. Dr. MERVE YÜCEL

Hitit University, merve.yucel@outlook.com.tr-0000-0001-7990-2821

ÖZET

Sturm-Liouville problemleri, çeşitli fiziksel problemler için Schrödinger denkleminin çözümünde esastır. Bu problemin özdeğerleri, kuantum sistemlerinin enerji seviyelerini temsil eder ve özfonksiyonlar ise parçacıkların durum fonksiyonlarına karşılık gelir. Bu sebeple Sturm-Liouville teorisi kuantum teorisinin gelişimi ve atomik, moleküler ve katı hal fiziğindeki uygulamaları için çok önemlidir. Benzer şekilde telin, zarların titreşimi ve elektromanyetik dalgaların yayılması dahil olmak üzere dalga mekaniğindeki birçok problem Sturm-Liouville problemleri olarak formüle edilebilir. Bu çalışmanın esas amacı yeni bir Sturm-Liouville probleminin özdeğerlerini incelenmektir. Araştırdığımız problem klasik Sturm-Liouville problemlerinden bir çok açıdan farklıdır. İnceleme altında olan problemin diferansiyel denklemi tek aralıkta değil ortak uç noktaları olan iki ayrık aralıkta tanımlıdır. Problemimiz sınır şartlarının yanısıra iletim noktasında ek geçiş şartları da içermektedir. Ayrıca diferensiyel denklem esas aralığın sınır noktalarının birinde veya her ikisinde singülerliğe (tekilliğe) sahip olabilir. Problemimizde elde edilen sonuçlar uygun klasik sonuçları genelleştirmektedir.

Keywords: İki-aralıklı tekil Sturm-Liouville problemi, pozitif özdeğer, özfonksiyon.

ISBN NR. : 978-625-6283-85-5

THE RAYLEIGH QUOTIENT FOR ONE SINGULAR STURM-LIOUVILLE PROBLEM

Oktay Sh. MUKHTAROV

Tokat Gaziosmanpaşa University, Department of Mathematics/Faculty of Arts and Science,

ORCID ID 0000-0001-7480-6857

Institute of Mathematics and Mechanics, Baku, Azerbaijan

Kadriye AYDEMIR

Amasya University, Department of Mathematics/Faculty of Arts and Science,

ORCID ID 0000-0002-8378-3949

Hayati OLĞAR

Tokat Gaziosmanpaşa University, Department of Mathematics/Faculty of Arts and Science,

ORCID ID 000-0003-4732-1605

ABSTRACT

One of the important methods of mathematical physics is the separation of variables method, which leads to Sturm-Liouville type eigenvalue problems and then to representations of functions from certain functional spaces in terms of eigenfunctions of these Sturm-Liouville problems. Namely after applying this method a large number of physical problems lead to a homogeneous second-order linear ordinary differential equation of the form

$$\frac{d}{dx}\left(p(x)\frac{d}{dx}t\right) + q(x)t + \lambda w(x)t = 0, \quad a < x < b$$

together with appropriate boundary conditions. Many methods have been developed in classical Sturm-Liouville theory. One of the most effective methods applied to investigate the qualitative properties of eigenvalues and the corresponding eigenfunctions of Sturm-Liouville problems is the Rayleigh quotient and the methods of variational analysis based on this quotient. In this work, a new generalization of the Rayleigh quotient will be developed and the eigenvalues and eigenfunctions of two-interval Sturm-Liouville problems will be investigated. In particular, we found sufficient conditions on the coefficients of the Sturm-Liouville problem under consideration that guarantee the reality, simplicity and non-negativity of the eigenvalues.

Keywords: Singular two-interval Sturm-Liouville problem, Rayleigh quotient, eigenvalue.

ISBN NR. : 978-625-6283-85-5

EXISTENCE OF SOLUTIONS FOR GENERALIZED CAPUTO FRACTIONAL BOUNDARY VALUE PROBLEMS

Dr., OZLEM BATIT OZEN

Ege University, ozlem.ozen@ege.edu.tr – 0000-0003-3971-7116

SUMMARY

Fractional calculus, which generalizes the traditional notions of differentiation and integration to non-integer orders, has garnered significant attention in recent decades, as noted in the literature. This increased interest can be attributed to its efficacy in capturing the memory and hereditary characteristics of diverse materials and processes. The advent of generalized fractional derivatives further enriches this field, providing enhanced complexity and adaptability for more refined modeling of real-world phenomena.

The primary objective of this study is to derive rigorous results concerning the existence and uniqueness of solutions for the specified fractional boundary value problems. This investigation encompasses both theoretical analysis, utilizing advanced mathematical techniques, and computational approaches aimed at elucidating the fundamental dynamics at play.

This study explores positive solutions for generalized Caputo fractional boundary value problems involving the p-Laplacian operator. By employing fixed point theory within a cone, we establish existence results for solutions to nonlinear generalized Caputo fractional differential equations with the p-Laplacian. These results not only enhance the theoretical framework of fractional differential equations but also suggest potential applications across various scientific and engineering fields. Additionally, we present a clear and illustrative example that reinforces the key insights derived from this investigation.

Anahtar Kelimeler : Caputo derivatives and integrals with respect to a power function, p-Laplace operator; Green's function; Existence results, Fixed point theory.

ISBN NR. : 978-625-6283-85-5

DEVELOPMENT OF STATISTICS AND MACHINE LEARNING BASED CASH FORECASTING MODELS FOR AN ELECTRONIC PAYMENT COMPANY

Yusuf Ozan Köftegül
United Payment, Dept. of Money Transfer Solution in R&D Center,
yusuf.koftegul@unitedpayment.com - ORCD ID: 0009-0002-7716-6909
Yusuf Ali Koyuncu
United Payment, Dept. of Money Transfer Solution in R&D Center,
yusuf.koyuncu@unitedpayment.com - ORCID ID: 0009-0008-2322-2227
Zehra Sude Sarı
United Payment, R&D Center, zehra.sari@unitedpayment.com - ORCID ID: 0000-0002-0341-6488
M. Fatih Akay
Çukurova University, Dept. of Computer Engineering, mfakay@cu.edu.tr - ORCID ID: 0000-0003-0780-0679

ABSTRACT

Digital banks are modern platforms that extend the reach of traditional banking services by offering financial services over the Internet. These platforms provide significant convenience in payment and money transfer transactions. With technological advancements, integrations such as Electronic Fund Transfer (EFT) and Instant and Continuous Transfer of Funds (FAST) have become integral to digital banking. EFT and FAST are notable for their high transaction volumes in money transfers. However, manual management of funds during the use of these integrations result in financial losses when there is an excess of money in the account, and customer dissatisfaction when funds are insufficient. The aim of this study is to predict how much cash should be held at which bank for an electronic payment company. To achieve this, forecasting models have been developed using Long Short-Term Memory (LSTM), Multi-Horizon Quantile Recurrent Forecaster (MQRNN), Multi-Layer Perceptron (MLP), Auto-Regressive Integrated Moving Average (ARIMA) and Seasonal AutoRegressive Integrated Moving Average (SARIMA). Data have been collected for two different banks from United Payment. Weekly forecasting models have been developed for each bank. The performance of the models has been evaluated using Mean Absolute Percentage Error (MAPE). The results obtained with the prediction models show that MLP demonstrates superior performance by providing the most accurate forecast results for both banks.

Keywords: Cash Forecasting, Fund Management, Machine Learning

ISBN NR. : 978-625-6283-85-5

DEVELOPMENT OF A DIGITAL HOUSEKEEPING SYSTEM TO OPTIMIZE MEZZANINE LOCATIONS IN A WAREHOUSE

Murat Yüce

Trendyol, murat.yuce@trendyol.com - **ORCID ID:** 0009-0003-1594-3466

Alişan Araslı

Trendyol, alisan.arasli@trendyol.com - **ORCID ID:** 0000-0002-3724-5429

Ceren Ulus

Çukurova University, f.cerenulus@gmail.com - **ORCID ID:** 0000-0003-2086-6381

M. Fatih Akay

Çukurova University, mfakay@cu.edu.tr - **ORCID ID:** 0000-0003-0780-0679

ABSTRACT

In today's rapidly evolving world, e-commerce marketplaces are experiencing significant and dynamic growth. To remain competitive and deliver superior customer service, e-commerce businesses must implement various strategic measures. Efficient warehouse management and process acceleration are critical factors in gaining a competitive edge, as they enable businesses to respond swiftly to customer demands. Inefficient warehouse and location management result in time and cost inefficiencies, leading to wasted company resources. Therefore, automating warehouse management holds substantial importance for e-commerce operations. This study aims to transform manually managed housekeeping processes within Trendyol warehouses into a systematic structure, thereby enhancing both personnel and process efficiency. For this purpose, a system has been developed that allows products with the same barcode distributed across different mezzanine locations to be collected in a planned manner and these products to be addressed to a single location, creating locations with the same barcode. The plan management page has been created on the VENA program and collection algorithm scenarios have been developed in line with this page. With the developed system, mono locations where the same type of products are located together have been created in order to increase picking efficiency and 100% tracking of location occupancy has been ensured.

Keywords: Housekeeping, Automatic Plan Creating, Location Organizing System

ISBN NR. : 978-625-6283-85-5

TIME SERIES BASED FINANCIAL COMPONENT FORECASTING MODELS FOR THE E-COMMERCE SECTOR

Emre Taşbaş[1], Mahmut Burak Kazçin[2], Zehra Sude Sarı[3], M. Fatih Akay[4]

[1]Inveon, Dept. of R&D, emre.tasbas@inveon.com - ORCID ID: 0009-0003-7927-7079

[2]Inveon, Dept. of R&D, burak.kazcin@inveon.com - ORCID ID: 0009-0001-7770-3316

[3]Inveon, Dept. of Data Science, sude.sari@inveon.com - ORCID ID: 0000-0002-0341-6488

[4]Çukurova University, Dept. of Computer Engineering, mfakay@cu.edu.tr - ORCID ID: 0000-0003-0780-0679

ABSTRACT

The contemporary e-commerce sector is evolving with dynamic momentum. This growth requires e-commerce companies offering a wide range of services to take various strategic steps. To differentiate themselves in a competitive market, these companies must prioritize effective cost optimization. Financial forecasting emerges as a crucial tool that enables companies to execute cost optimizations effectively. In this regard, accurate financial component forecasts (such as income/expense, cash/credit card/promissory note collections, invoice amounts, etc.) are essential for predicting future financial performance and guiding strategic decision-making. The aim of this study is to develop financial component forecasting models for e-commerce sector. To achieve this, financial forecasting models have been developed using Long Short-Term Memory (LSTM), Bi-Directional Long Short-Term Memory (Bi-LSTM), Convolutional Long Short-Term Memory (ConvLSTM), and Auto-Regressive Integrated Moving Average (ARIMA). The weekly dataset encompassing card collections, cash collections, and cash payments for the period from January 1, 2017, to July 24, 2022, has been created. Financial forecasting models have been developed for the months March and July. The performance of the models has been evaluated using Mean Absolute Percentage Error (MAPE). Among the models developed for July, the superior performance has been provided by the ARIMA model for the cash collection. When the forecasting models developed for March have been examined, it has been observed that the model with the lowest MAPE has been obtained with the ConvLSTM model developed for card collection.

Keywords: Financial Forecasting, Times Series, Machine Learning, E-Commerce

ISBN NR. : 978-625-6283-85-5

DETECTION OF FIELD INVENTORIES IN ENERGY SERVICE COMPANIES USING IMAGE PROCESSING AND DEEP LEARNING

HATICE ÖZDEMİR
Universal Software, hozdemir@uni-yaz.com - 0000-0003-2112-825X
EYMEN BERKAY YORULMAZ
Universal Software, byorulmaz@uni-yaz.com - 0000-0003-3370-9465
GÖZDE UYGUR
Universal Software, guygur@uni-yaz.com - 0000-0002-1103-5271
ADEM SELLER
Universal Software, aseller@uni-yaz.com - 0000-0001-7776-2167
PROF. DR. M. FATİH AKAY
Cukurova University, Department of Computer Engineering, mfakay@cu.edu.tr - 0000-0003-0780-0679

ABSTRACT

This study aims to address the challenges encountered in managing inventory photos in the energy sector, particularly within energy service companies. The capture and upload of photos without content analysis make it difficult to identify the desired inventory photos and extract relevant data. To overcome this issue, the study proposes the development of algorithms based on image processing and deep learning to recognize inventory photos and classify them into specific categories. The research involves the classification of six distinct inventory categories: lighting panel, transformer, lighting pole, cell, building, and distribution network. A comprehensive dataset obtained from EnerjiSA has been utilized in this study, and classification models have been developed using Convolutional Neural Network (CNN)-Adam Optimization and You Only Look Once (YOLO) (versions 3 and 5) algorithms. The performance of the developed models has been evaluated using accuracy and F-score metrics. The results demonstrate the high effectiveness of the proposed algorithms in distinguishing inventory photos within the energy sector. The application of these algorithms can reduce photographic clutter, improve inventory management processes, and provide real-time feedback on photo quality, helping users to achieve more accurate and standard-compliant photos.

Keywords: Computer Vision, Deep Learning, Energy Sector, Inventory Photographs

ISBN NR. : 978-625-6283-85-5

GEOMETRIC APPROACH FOR PARAMETER ESTIMATION IN THROUGH-THE-WALL RADARS

Assist. Prof. Ridvan Firat Cinar

Batman University, Faculty of Engineering and Architecture, Department of Computer Engineering, ridvanfirat.cinar@batman.edu.tr - ORCID: 0000-0002-0904-2165

SUMMARY

In this research article, a deterministic approach is presented to determine structural parameters such as wall thickness, the number of layers, the distance of the front wall to the radar and electrical parameters such as permeability in through-the-wall imaging. The approach is developed using advanced signal processing techniques and geometric methods that operates in the time domain for an ultra-wideband linear phased array radar and focuses on the time-delay-only approach. In this method, where the phased array is used as both the transmitter and receiver, solving the overdetermined system of equations formed by all transmitter-receiver element pairs minimizes errors caused by the imperfect nature of the signal and the sensing environment. The dependence of the results on changes in the signal-to-noise ratio is analyzed and presented. Comprehensive multi-layer simulation studies are conducted to validate the approach, utilizing realistic scenarios that mimic the varying dielectric properties of wall materials, and environmental conditions affecting radar wave propagation. The results can be used in radar imaging equations to maximize accuracy in target localization. The implications of this research extend beyond wall imaging; applications in search and rescue operations, security surveillance, and structural health monitoring are explored, showcasing the versatility of the approach in practical scenarios. Future studies can be developed for more complex scenarios.

Keywords: Radar imaging, Through-the-wall radar, phased array, parameter estimation.

ISBN NR. : 978-625-6283-85-5

SYNTHETIC DATA GENERATION WITH LARGE LANGUAGE MODELS TO EVALUATE ENSEMBLE REGRESSION ALGORITHMS

Assoc. Prof. Dr. Fatih YÜCALAR
Manisa Celal Bayar University, fatih.yucalar@cbu.edu.tr – 0000-0002-1006-2227
Prof. Dr. Akın ÖZÇİFT
Manisa Celal Bayar University, akin.ozcift@cbu.edu.tr – 0000-0002-5317-5678

ABSTRACT

In the realm of real estate price prediction, synthetic data generation using Large Language Models (LLMs) has emerged as a valuable approach to evaluate and compare ensemble regression algorithms. This study explores the effectiveness of various ensemble techniques in predicting real estate prices by leveraging a synthetic dataset designed to simulate real-world scenarios. The dataset includes diverse property features and pricing factors, providing a robust foundation for testing the predictive performance of the algorithms. We evaluated several ensemble regression algorithms, including Ridge, Voting, Gradient Boosting, Extra Trees, Random Forest, Bagging, AdaBoost, Decision Tree, SVR, and a hybrid model combining Bagging and SVR. The performance of these algorithms was assessed based on their Root Mean Square Error (RMSE) values, revealing notable differences in predictive accuracy. Ridge Regression emerged as the most effective algorithm, achieving the lowest RMSE of 24,885. In contrast, the SVR algorithm exhibited the highest RMSE of 170,548, indicating substantial deviation from actual values. The Bagging + SVR combination also performed poorly with an RMSE of 170,806. The results highlight the varying degrees of effectiveness among the evaluated algorithms, with Ridge Regression, Voting, and Gradient Boosting showing superior performance compared to others. This analysis underscores the potential of synthetic data generation in assessing and refining ensemble regression methods, offering valuable insights for improving real estate price prediction models. The findings contribute to a broader understanding of ensemble learning techniques and their application in predictive analytics.

Keywords: Ensemble Regression Algorithms, House Price Prediction, Large Language Models.

ISBN NR. : 978-625-6283-85-5

RIDGE REGRESSION PARAMETER OPTIMIZATION IN HOUSE PRICE PREDICTION

Prof. Dr. Akın ÖZÇİFT

Manisa Celal Bayar University, akin.ozcift@cbu.edu.tr – 0000-0002-5317-5678

Assoc. Prof. Dr. Fatih YÜCALAR

Manisa Celal Bayar University, fatih.yucalar@cbu.edu.tr – 0000-0002-1006-2227

ABSTRACT

In this study, we explore the optimization of Ridge Regression for house price prediction by fine-tuning its regularization parameter, alpha. Ridge regression, a technique that introduces a penalty term to the linear regression model, helps mitigate issues of multicollinearity and overfitting by shrinking the coefficients of less relevant features. The regularization parameter alpha controls the strength of this penalty, and selecting an optimal value is crucial for enhancing model performance. To identify the best alpha value for our model, we employed Grid Search with cross-validation. This approach systematically evaluates a range of alpha values to determine which provides the best balance between model complexity and prediction accuracy. Our parameter search was conducted over a logarithmic scale of alpha values, ranging from 10^{-4} to 10^{4}, ensuring a comprehensive exploration of potential regularization strengths. The Grid Search procedure yielded an optimal alpha value of approximately 1.6238. This parameter value was found to significantly improve the Ridge Regressor's performance, resulting in an impressive Root Mean Square Error (RMSE) of 24,275 on the validation set. The RMSE metric, which measures the average magnitude of prediction errors, is crucial in evaluating the model's accuracy. A lower RMSE indicates better predictive performance, and our optimized model achieved a competitive RMSE, demonstrating its efficacy in handling house price prediction tasks. The results highlight the importance of parameter tuning in machine learning models, particularly in regression tasks where regularization can dramatically influence performance. The successful optimization of the alpha parameter underscores the potential of Ridge Regression in providing reliable and accurate predictions for real estate pricing. This study contributes to the broader understanding of parameter optimization techniques and their impact on model accuracy in the domain of predictive analytics.

Keywords: Ridge Regression Algorithms, House Price Prediction, Grid Search, Alpha Value, Regression.

ISBN NR. : 978-625-6283-85-5

ANKARA BÖLGESİNDE EN YÜKSEK DOMATES VERİMİNİ SAĞLAYAN OPTİMUM SULAMANIN DSSAT İLE MODELLENMESİ

Ziraat Yüksek Mühendisi, Abdelrahman Amr Ali Rabie Elsayed SALEH
Ankara Üniversitesi Ziraat Fakültesi Tarımsal Yapılar ve Sulama Bölümü,
abdulrahman.amr.ali@gmail.com, https://orcid.org/0000-0003-4304-1075
Araştırma Görevlisi, Elifnaz TORUN
Ankara Üniversitesi Ziraat Fakültesi Tarımsal Yapılar ve Sulama Bölümü,
torune@ankara.edu.tr, https://orcid.org/0000-0003-1712-3819
Profesör, Halit APAYDIN
Ankara Üniversitesi Ziraat Fakültesi Tarımsal Yapılar ve Sulama Bölümü,
apaydin@ankara.edu.tr, https://orcid.org/0000-0002-9875-7321

ÖZET

İklim değişikliği ve artan kurak dönemlerin etkisi ile sulamanın optimize edilmesi günümüzde zorunlu bir hale gelmiştir. Bu çalışma, Ankara bölgesindeki domates yetiştiriciliği için en uygun sulama stratejilerinin belirlenmesi amacıyla Decision Support System for Agrotechnology Transfer (Agroteknoloji Transferi için Karar Destek Sistemi - DSSAT) modelinin kullanılması ile bitki büyümesi ve verimin simüle edilmesini kapsamaktadır. Çalışmada, Ankara iline ait meteorolojik, toprak ve bitki verileri kullanılmıştır. FAO-56 Penman-Monteith yöntemi ile çim bitkisi esas alınarak günlük referans evapotranspirasyon hesaplanmış ve DSSAT CROPGRO-Tomato modeli kullanılarak, domates bitkisinin büyüme sezonu boyunca bitki büyümesi, toprak nem içeriği ve verim miktarı simüle edilmiştir. Çalışmada simüle edilen toplam 3258 büyüme mevsimi boyunca damla sulama yönetimi parametrelerinin alternatiflerinin kullanılması ile elde edilen simülasyon verileri ve ölçülen veriler karşılaştırılmıştır. Simüle edilen verim ile gerçek verim arasındaki fark en fazla 284.92 kg kuru madde (6.83%) iken, en düşük fark 3.5 kg kuru madde (0.09%) olarak bulunmuştur. Optimum verimin, 20 sulamada ortalama 4083.03 ± 721.64 kg/ha olacağı belirlenmiştir. Simülasyon sonuçları, sulama stratejilerinin doğru yönetimiyle domates veriminin en iyi düzeyde tutulabileceğini göstermektedir. Simüle edilen verim ile gerçek verim sonuçları karşılaştırıldığında, DSSAT modelinin kabul edilebilir hata payı ile sonuçlar ürettiği tespit edilmiştir. Çalışmanın bulguları, sulama planlamasında gelişmiş modellerin kullanımı sayesinde su tüketiminin azaltılabileceğini ve verimin korunabileceğini ortaya koymaktadır.

Anahtar Kelimeler : Sulama planlaması, optimum sulama, DSSAT, bitki büyüme modeli, su kullanım verimliliği

ISBN NR. : 978-625-6283-85-5

MODELING THE OPTIMUM IRRIGATION THAT PROVIDES THE HIGHEST TOMATO YIELD IN ANKARA REGION WITH DSSAT

Abstract

Irrigation optimization has become a necessity nowadays due to climate change and increasing drought periods. This study covers the simulation of plant growth and yield by using Decision Support System for Agrotechnology Transfer (DSSAT) model to determine the most appropriate irrigation strategies for tomato cultivation in Ankara region. In the study, meteorological, soil and plant data of Ankara province were used. The FAO-56 Penman-Monteith method was used to calculate daily reference evapotranspiration based on the grass plant and the DSSAT CROPGRO-Tomato model was used to simulate plant growth, soil moisture content and yield of tomato plants during the growing season. Simulation data and measured data obtained by using alternatives of drip irrigation management parameters for a total of 3258 growing seasons simulated in the study were compared. The maximum difference between simulated yield and actual yield was 284.92 kg dry matter (6.83%), while the minimum difference was 3.5 kg dry matter (0.09%). The optimum yield was determined to be 4083.03 ± 721.64 kg/ha in 20 irrigations. The simulation results show that tomato yield can be maintained at the optimum level with proper management of irrigation strategies. When the simulated yield results were compared with the actual yield results, it was found that the DSSAT model produced results with an acceptable margin of error. The results of the study reveal that water consumption can be reduced and yield can be maintained by using advanced models in irrigation scheduling.

Keywords : Irrigation scheduling, optimum irrigation, DSSAT, plant growth model, water use efficiency

ISBN NR. : 978-625-6283-85-5

SAFFLOWER (*CARTHAMUS TINCTORIUS* L.) BREEDING OBJECTIVES

Prof. Dr. Belgin COŞGE ŞENKAL
Yozgat Bozok University, belgin.senkal@yobu.edu.tr- ORCID ID:0000-0001-8330-8098

ABSTRACT

Safflower (*Carthamus tinctorius* L., 2n:24) is strong root developing, abundantly branching, oil seed crop generally up to 100 cm tall from the Compositae family. Safflower is an important crop for arid agricultural areas due to its high tolerance to cold and drought. Safflower seeds contain an average of 35-40% oil. This seed oil has properties that can be used for both food and industrial purposes. Due to the high linoleic ($C_{18}H_{32}O_2$) fatty acid content, safflower seed oil provides raw materials to many industries. Its seeds are also evaluated in animal nutrition. Carthamin, which contains a yellow-red dye, is obtained from the petals of the safflower flower. With plant breeding studies, the genetic structure of economically important plants is changed and developed within a plan according to the demands of growers and consumers. The aim of plant breeding is to contribute to agricultural production by developing high-quality and productive cultivars that are more suitable for climate and soil conditions and resistant to diseases and pests. Although safflower plants have many advantages over other oil crops, there is a need to develop high-yield hybrid cultivars for their cultivation to become widespread. Among the basic goals targeted in safflower breeding programs are “high oil content, high seed yield, resistance to diseases and spineless”. In this study, the breeding purposes, and targets of the aspirin plant for use in different areas were evaluated with current literature data.

Keywords: Seed yield, oil content, fatty acid, flower color, spiny

ISBN NR. : 978-625-6283-85-5

EVALUATION OF RELATIONSHIPS BETWEEN SEED YIELD AND SOME AGRONOMIC CHARACTERS IN SAFFLOWER (*CARTHAMUS TINCTORIUS* L.)

Prof. Dr. Belgin COŞGE ŞENKAL
Yozgat Bozok University, belgin.senkal@yobu.edu.tr- ORCID ID:0000-0001-8330-8098

ABSTRACT

Safflower (*Carthamus tinctorius* L.) is an important annual oil crop that has been cultivated since ancient times. The plant height is average 1-1.5 m. The plant has a main stem and many side branches attached to the main stem. The number of side branches varies between 10-30 depending on the variety, climatic conditions and cultural practices. The flower is in a small head at the end of the main stem and side branches. Seeds are in a fibrous structure made of cellulose in a head that has reached harvest maturity. Although it varies according to cultivars, thousand seed weight is between 30-45 g. Plant height, number of branches, number of head, number of seeds per head, seed yield per plant, thousand seed weight and oil ratio are the characters related to seed yield in safflower. Seed yield is a quantitative trait that is controlled by many genes and significantly affected by environmental factors. Therefore, to be successful in plant breeding programs, it is more effective to use yield elements and quality traits as selection criteria instead of yield. In this study, correlation, path and biplot analyses were performed and a heat map was created to determine the relationships between seed yield and yield components of some safflower varieties and to determine selection criteria. It was determined that plant height, number of branches, number of heads and thousand seed weight had positive effects on seed yield.

Keywords: Yield, selection, correlation, thousand seed weight

ISBN NR. : 978-625-6283-85-5

DETERMINATION OF FORAGE PERFORMANCES OF SOME SORGHUM (*Sorghum bicolor* (L.)) VARIETIES IN ANTALYA CONDITIONS

Assoc. Prof. Dr. Cengiz ERDURMUŞ

Batı Akdeniz Agricultural Research Institute, Antalya-Türkiye

cengiz.erdurmus@tarimorman.gov.tr – 0000-0002-2185-9901

ABSTRACT

Sorghum stands out as one of the most suitable crop plants for today's climate change conditions with its ability to adapt to abiotic stress factors such as poor soil properties and flooding, high temperature and low rainfall regimes, as well as its tolerance to various disease-causing biotic factors.

Sorghum (*Sorghum bicolor* (L.)), a member of the Poaceae family, is used for human and animal nutrition, and its stems are used for yield and silage purposes. In addition, it is used in the production of paper, refined sugar and molasses, and in the production of biogas and bioethanol.

Sorghum, one of the most important alternative plants for roughage production in animal nutrition, stands out as a quality forage plant with high biomass yield.

This study was carried out in 2021 in Antalya conditions. 5 different silage sorghum varieties were used in the study, and the forage yield (kg/ha), dry grass yield (kg/ha), leaf/stem ratio (%), development after cutting (1 - 5) and number of days to cluster formation (days) characteristics of the varieties were examined.

Key words: Sorghum, roughage, silage

ISBN NR. : 978-625-6283-85-5

IMPACTS OF CLIMATE CHANGE ON IRRIGATION AND AGRICULTURAL PRODUCTION: THE FUTURE OF WATER IN ANTALYA, TÜRKİYE

Assoc. Prof. Köksal AYDİNŞAKİR,
Batı Akdeniz Agricultural Research Institute, Antalya/Türkiye
koksal.aydinsakir@tarimorman.gov.tr- 0000-0003-0225-7646

ABSTRACT

Climate change significantly affects various aspects of life, including precipitation, water levels, temperature and flow, food, agriculture, health, industry, tourism and transport, and ecosystem integrity. In certain parts of the world, the negative effects of climate change are more pronounced. The Intergovernmental Panel on Climate Change (IPCC) has emphasized that the average annual temperature is projected to increase by 2.5-4.0°C in the future, with an increase of up to 4.0°C in the Aegean, Mediterranean and Eastern Anatolian regions and up to 5.0°C in the interior in Türkiye. Türkiye's climate change is expected to have adverse effects on water resources, aridity, desertification and environmental degradation. Water is the most important factor limiting agricultural production in the world, especially in semi-arid and arid regions. Water, which is the source of life on earth, is one of the indispensable inputs for crop production and will be under threat. Due to the fact that many regions of Türkiye are located in the arid and semi-arid climate zone and the increasing global warming, the insufficient natural precipitation during the growing period of the plant and the decrease in clean water resources negatively affect the high yield and quality in crop production. This study is concerned with analyzing the impacts of climate change on irrigation and agricultural production, the measures taken to mitigate these impacts, and the future of water in Antalya, Türkiye.

Keywords: Drought, Global warming, Rainfall, Water stress

ISBN NR. : 978-625-6283-85-5

DETERMINATION OF THE SUITABILITY OF DIFFERENT WATER RESOURCES FOR IRRIGATION IN AYAŞ REGION

MSc. Ayfer BURDURLUOĞLU

ayburdur@gmail.com, ORCID: 0009-0008-5287-4523

Prof. Dr. Ahmet ÖZTÜRK

Ankara University, Faculty of Agriculture, Department of Farm Structures and Irrigation, Ankara, Turkey. aozturk@ankara.edu.tr, ORCID: 0000-0003-0201-1726

ABSTRACT

The main purpose in agricultural production is to provide maximum efficiency. The most significant input in increasing agricultural productivity is irrigation. However, it is also necessary to take into consideration the effects of the solid substances dissolved in the water and given to the soil with the irrigation water. Nowadays, since it is difficult to find water in sufficient quantity and quality, low quality water is also used in agriculture. The use of these waters may cause arable lands to become saline over time and the expected yield in plant production to decrease.

In this study, the irrigation water quality of 1 dam, 2 ponds, 3 streams and 8 wells used for irrigation purposes in Ayaş district of Ankara province was examined and their suitability for the products grown in the region was discussed by evaluating them according to certain classification systems. According to the results, there is no restricting factor inhibiting the use of irrigation water samples taken from 14 source, except 3 of them. In sodium classification of water samples, it has been found that 4 samples are classified into the best quality, 8 samples are classified into good quality, and 2 samples are classified into acceptable quality. In the salinity assessment, it was determined that eight samples were in the good, i.e. medium salt water class, three samples were in the high salty water class within acceptable limits, and three samples were unusable due to very high salt content. It is clear that the use of these high salt content waters in the cultivation of plants sensitive to salinity will cause a decrease in yield. It has been revealed that some salinity management studies such as selection of irrigation method, drainage and leaching water addition should be carried out in the region to prevent yield reduction.

Key Words: Irrigation water quality, salinity, crop production

ISBN NR. : 978-625-6283-85-5

AYAŞ YÖRESİNDEKİ FARKLI SU KAYNAKLARININ SULAMAYA UYGUNLUĞUNUN BELİRLENMESİ

Ziraat Yük. Müh. Ayfer BURDURLUOĞLU

ayburdur@gmail.com, **ORCID:** 0009-0008-5287-4523

Prof. Dr. Ahmet ÖZTÜRK

Ankara Üniversitesi, Ziraat Fakültesi, Tarımsal Yapılar ve Sulama Bölümü, Ankara, Türkiye.
aozturk@ankara.edu.tr, **ORCID:** 0000-0003-0201-1726

ÖZET

Tarımsal üretimde asıl amaç maksimum verimi sağlamaktır. Verim artışındaki en önemli girdi ise sulamadır. Ancak, sulama suyu ile birlikte toprağa verilen, suda erimiş halde bulunan katı maddelerin etkilerini de göz önünde tutmak gerekmektedir. Çünkü bu maddelerin miktar ve cinsleri, sulama suyunun kalitesini belirlemektedir. Günümüzde, yeterli miktar ve kalitede su bulmak zorlaştığı için, düşük kaliteli suların da tarımda kullanımı söz konusudur. Bu suların kullanımı zamanla tarım yapılabilir arazilerin tarım dışı kalmasına ve bitkisel üretimde beklenen verimin düşmesine neden olabilmektedir.

Bu çalışmada, Ankara ili Ayaş ilçesindeki sulama amaçlı kullanılan 1 baraj, 2 gölet, 3 akarsu ve 8 kuyu sularının sulama suyu yönünden kaliteleri incelenmiş ve belli sınıflandırma sistemlerine göre değerlendirilerek bölgede yetiştirilen ürünler için uygunluğu tartışılmıştır. Elde edilen bulgulara göre, seçilen 14 sulama suyu örneğinden 3'ü dışındakilerin kullanımında herhangi bir kısıtlayıcı etkene rastlanmamıştır. Su örneklerinin sodyum sınıflandırmasında; dört örneğin çok iyi kalitede sular sınıfında, sekiz örneğin iyi kalitede sular ve iki örneğin kabul edilebilir sınırlarda sular olduğu belirlenmiştir. Tuzluluk değerlendirmesinde ise sekiz örneğin iyi, yani orta tuzlu sular sınıfına girdiği, üç örneğin kabul edilebilir sınırlarda yüksek tuzlu sular sınıfında, üç örneğin ise, çok yüksek tuz içeriği ile kullanılamaz olduğu saptanmıştır. Tuzluluğa hassas bitkilerin yetiştirilmesinde bu yüksek tuz içerikli suların kullanılmasının verimde düşüşe neden olacağı açıktır. Verim azalmasını engellemek için bölgede sulama yöntemi seçimi, drenaj ve yıkama suyu ilavesi gibi bazı tuzluluk yönetimi çalışmalarının yapılması gerektiği ortaya çıkmıştır.

Anahtar Kelimeler: Sulama suyu kalitesi, tuzluluk, bitki verimi

ISBN NR. : 978-625-6283-85-5

CHITOSAN NANOPARTICLES AND THEIR INFLUENCE ON GENE EXPRESSION AND SECONDARY METABOLISM IN FRUITS

Assoc. Prof. Dr. MÜJGAN GÜNEY
Yozgat Bozok University, mujgan.guney@yobu.edu.tr - ORCID ID: 0000-0001-5491-1430
Assist. Prof. Dr. GÖKÇE AYDÖNER ÇOBAN
Yozgat Bozok University, gokce.aydoner@yobu.edu.tr- ORCID ID: 0000-0002-0851-8803
Assoc. Prof. Dr. MURAT GÜNEY
Yozgat Bozok University, murat.guney@yobu.edu.tr - ORCID ID: 0000-0003-2882-8347

ABSTRACT

Chitosan nanoparticles (CNPs) have emerged as a promising tool in horticulture, particularly in enhancing gene expression and secondary metabolism in fruits. Their biocompatibility, biodegradability, and antimicrobial properties make them effective in improving plant growth, stress tolerance, and disease resistance. CNPs act as biostimulants, by enhancing physiological and biochemical processes such as promoting seed germination, photosynthesis, and nutrient absorption. They enhance the production of secondary metabolites, such as alkaloids and phenolic compounds, which help plants combat oxidative stress and improve tolerance to abiotic stresses like drought and salinity. Additionally, CNPs induce defense responses by upregulating defense-related genes, such as chitinase and peroxidase, which protect against fungal pathogens. Studies have demonstrated the effectiveness of CNPs in controlling diseases such as blue mold and enhancing plant defenses against pathogens, resulting in healthier and more resilient fruit crops. Furthermore, CNPs serve as innovative nanocarriers for the controlled delivery of agrochemicals, enhancing the efficiency of fertilizers, pesticides, and plant growth regulators. The ability of CNPs to mitigate stress, promote growth, and provide disease protection positions them as a valuable alternative to synthetic agrochemicals, contributing to more sustainable horticultural practices and improving the quality and yield of fruit crops. Chitosan nanoparticles (CNPs) are increasingly recognized for their potential applications in agriculture, particularly for enhancing plant growth, improving stress tolerance, and managing diseases. Their unique properties, such as biocompatibility, biodegradability, and non-toxicity, make them a promising alternative for sustainable agricultural practices.

Keywords: Chitosan, Nanoparticles, Stress, Secondary Metabolites, Nanocarrier

ISBN NR. : 978-625-6283-85-5

THE ROLE OF SECONDARY METABOLITES IN PLANT STRESS RESPONSES: BIOTECHNOLOGICAL APPROACHES FOR CROP IMPROVEMENT

Assoc. Prof. Dr. MÜJGAN GÜNEY
Yozgat Bozok University, mujgan.guney@yobu.edu.tr - ORCID ID: 0000-0001-5491-1430
Assoc. Prof. Dr. HAKAN KELES
Yozgat Bozok University, hakan.keles@yobu.edu.tr - ORCID ID: 0000-0002-8225-931X
Assoc. Prof. Dr. SERVET ARAS
Yozgat Bozok University, servet.aras@yobu.edu.tr - ORCID ID: 0000-0002-0347-6552

ABSTRACT

Secondary metabolites (SMs) are vital compounds in plants, playing critical roles in defense against biotic and abiotic stresses, such as pathogens, drought, salinity, and temperature fluctuations. Secondary metabolites include alkaloids, terpenoids, flavonoids, and polyphenols producing via complex biosynthetic pathways and provide functions including antioxidant defense, structural support, and modulation of signaling pathways. Recent advancements in biotechnology have revolutionized the ability to modulate the production of these secondary metabolites, offering a promising approach for crop improvement. CRISPR/Cas9 and RNA interference (RNAi) technologies have emerged as key biotechnological tools that enable precise and targeted manipulation of genes responsible for secondary metabolite biosynthesis. CRISPR/Cas9 allows for the specific modification of genes and regulatory elements in metabolic pathways, leading to enhanced production of high-value compounds such as carotenoids, terpenoids, and flavonoids. Targeting transcription factors and regulatory genes with this gene-editing technique has optimized metabolic activity in the direction of targeted metabolites. RNAi complements CRISPR by providing an effective strategy to silence specific genes, thus suppressing unwanted metabolic pathways while promoting the accumulation of beneficial compounds like anthocyanins and alkaloids. Small RNAs, including miRNAs and siRNAs, further regulate secondary metabolite biosynthesis by fine-tuning the expression of key genes. This post-transcriptional regulation allows for precise control of metabolic pathways, improving the production and quality of secondary metabolites in horticultural crops. Additionally, nanotechnology has enhanced the delivery of CRISPR and RNAi components, increasing the stability and efficiency of gene editing in plants. Biotechnological approaches, such as genetic engineering, marker-assisted selection, and metabolic engineering, are applied to enhance SM accumulation and optimize stress response mechanisms. Elicitors are also used to stimulate SM production, improving plant resilience under controlled conditions. The integration of omics technologies, such as metabolomics and transcriptomics, along with advanced gene editing and elicitor applications, provides sustainable and innovative strategies for crop improvement. These methods help meet the challenges posed by climate change, environmental stressors, and food security needs, ensuring the development of resilient, high-yielding crops with enhanced nutritional and medicinal properties. These innovations offer precise, efficient, and sustainable solutions for improving crop resilience, quality, and yield, contributing to the future of sustainable agriculture and food security.

ISBN NR. : 978-625-6283-85-5

Keywords: Secondary metabolites, Stress, RNAi, CRISPR/Cas9, Elicitors

ISBN NR. : 978-625-6283-85-5

TARIM ALANINDA NANOPARTİKÜLLERİN KULLANIMI

Doç. Dr. HAKAN KELES
Yozgat Bozok Üniversitesi – hakan.keles@yobu.edu.tr - 0000-0002-8225-931X

Doç. Dr. Servet ARAS
Yozgat Bozok Üniversitesi – servet.aras@yobu.edu.tr - 0000-0002-0347-6552

Doç. Dr. Murat GÜNEY
Yozgat Bozok Üniversitesi – murat.guney@yobu.edu.tr - 0000-0003-2882-8347

ÖZET

Dünya üzerinde artan nüfus odaklı olarak ortaya çıkmış hızlı ve plansız kentleşme, nüfus ihtiyaçlarını karşılamak amacıyla yapılan yoğun tarımsal uygulamalar ve sanayi faaliyetleri günden güne ekolojiyi olumsuz yönde etkilemekte ve birçok felaket senaryosunun başrolünü oynamaktadırlar. En önemli konulardan birisi nüfusun besin ihtiyaçlarını karşılamaktır. Bunu sağlamak amacıyla ise birim alandan elde edilen ürünün artırılmasına yönelik çalışmalar her geçen gün artmaktadır. Kimyasal gübrelerin önemli bir yer tuttuğu bu tarımsal faaliyetler dolayısıyla topraklarda ve yer altı sularında ciddi bulaşmalar olmakla birlikte bu materyallerin kullanımı tam anlamıyla eksiklikleri gidememektedir. Birim alandaki ürün artışını sağlamaktaki zorunluluk, olumsuzluklarına rağmen kimyasal gübre kullanımında artışa sebebiyet verecektir.

Son yıllarda çevreci politikalardaki değişiklikler, bireyler ve toplumların kazandıkları bilinç sayesinde çevre dostu ürün kullanımı giderek yaygınlaşmaktadır. Özellikle tarımsal faaliyetlerde ortaya çıkan birçok doğa dostu materyalin kullanımı ve etkisi üzerine çok sayıda çalışma yapılmaktadır. Son dönemlerde popüler hale gelen çevreci ürünlerden birisi ise nanopartiküllerdir. Özellikle bitki özleri, bitki dokuları, mantarlar, bakteriler ve algler gibi doğal malzemeler kullanılarak yeşil sentez yöntemi ile üretilen nanopartiküller doğa dostu ürünlerdir. Ayrıca nanopartüküllerin boyutları ve yüzey alanlarının genişliği bitkiye nüfuzunu kolaylaştırmaktadır. Bu sebeplerle sentetik gübrelere kıyasla daha az miktarda ürünle daha fazla etki sağlayabilmektedirler.

Bu çalışmada, çevre dostu ürünler olan ve sentetik gübrelere alternatif olarak yüksek bir potansiyele sahip olan nanopartiküller hakkında detaylı bilgiler verilerek tarımsal amaçlı kullanım olanakları ve yapılmış çalışmalar irdelenmeye çalışılacaktır.

Anahtar Kelimeler: Tarım, nanopartiküller, çevre, kirlilik

USE OF NANOPARTICLES IN AGRICULTURE

ABSTRACT

The rapid and unplanned urbanization driven by the growing global population, intensive agricultural practices aimed at meeting population demands, and industrial activities are increasingly negatively affecting the ecology and playing a central role in numerous disaster scenarios. One of the most crucial issues is meeting the food needs of the population. To achieve this, efforts to increase the yield per unit area are intensifying every day. While chemical fertilizers play a significant role in these agricultural activities, they cause serious

ISBN NR. : 978-625-6283-85-5

contamination of soils and groundwater, and their use cannot fully address nutrient deficiencies. The necessity to increase the yield per unit area will lead to a rise in the use of chemical fertilizers, despite their negative impacts.

In recent years, thanks to changes in environmental policies and the awareness gained by individuals and societies, the use of environmentally friendly products is becoming increasingly widespread. Numerous studies are being conducted on the use and effects of many eco-friendly materials, particularly in agricultural activities. One of the eco-friendly products that have gained popularity in recent times is nanoparticles. Nanoparticles produced using the green synthesis method, especially with natural materials such as plant extracts, plant tissues, fungi, bacteria, and algae, are environmentally friendly products. Moreover, the small size and large surface area of nanoparticles facilitate their penetration into plants. For these reasons, they can provide more effect with a smaller amount of product compared to synthetic fertilizers.

In this study, detailed information about nanoparticles, which are environmentally friendly products with high potential as alternatives to synthetic fertilizers, will be presented, and their agricultural usage possibilities and existing studies will be reviewed.

Keywords: Agriculture, nanoparticles, environment, pollution

ISBN NR. : 978-625-6283-85-5

CEVİZ YETİŞTİRİCİLİĞİNDE ANAÇ KULLANIMI

Doç. Dr. HAKAN KELES
Yozgat Bozok Üniversitesi – hakan.keles@yobu.edu.tr - 0000-0002-8225-931X

Doç. Dr. MÜJGAN GÜNEY
Yozgat Bozok Üniversitesi, mujgan.guney@yobu.edu.tr - 0000-0001-5491-1430

Dr. Öğr. Üyesi GÖKÇE AYDÖNER ÇOBAN
Yozgat Bozok Üniversitesi, gokce.aydoner@yobu.edu.tr- 0000-0002-0851-8803

ÖZET

Tarımsal faaliyetlerin en önemlilerinden birisi bahçe bitkileri yetiştiriciliğidir. Bahçecilik faaliyetlerinde meyve yetiştiriciliği ve ıslahı önemli bir yer tutar. Çok eski tarihlere dayanan bir faaliyet alanı olan meyve yetiştiriciliği bazı teknik ve teknolojik gelişmeler ile birlikte daha yoğun bir tarımsal üretim alanı haline gelmiştir. Meyve anaçlarının ıslahı ve kullanımı bu gelişmelerin en önemlilerindendir. Meyvecilikte anaç kullanımı çok yönlü amaçlar için kullanılmakta ve yetiştiriciliği yapılacak tür ve çeşitleri birçok açıdan etkilemektedir. Anaç kullanımı sayesinde bitkilerin gelişim özellikleri amaca göre ayarlanabilmekte, yetiştiricilik kısıtları bulunan topraklarda üretim imkanı sunulabilmektedir. Elma, ayva, badem vb. türlere ait anaçlar Türkiye meyveciliğinde sıklıkla kullanılan ve yaygınlaşmış olan anaç türleridir. Sert kabuklu bir meyve olan ceviz, Türkiye' de olduğu gibi dünyanın birçok ülkesi için önemli ve değerli bir meyve türüdür. Yetiştiriciliği ve ıslahı ile ilgili birçok çalışma yapılmıştır ve yapılmaya devam etmektedir. Ceviz yetiştiriciliğinde anaç kullanımı bazı ülkelerde başlamış olsa da ülkemizde bu konuda var olan uygulama ve bilgi yok denecek kadar azdır.

Bu çalışmada ceviz türünde anaç kullanımı ile ilgili bilgiler ve çalışmalara yer verilerek özellikle Türkiye ceviz yetiştiriciliği bakımından ceviz anacı kullanımının potansiyeli tartışılmaya çalışılacaktır.

Anahtar Kelimeler: Ceviz, anaç, *Juglans regia*

USE OF ROOTSTOCKS IN WALNUT CULTIVATION

ABSTRACT

One of the most important agricultural activities is the cultivation of horticultural plants. In horticulture, fruit cultivation and breeding hold a significant place. Fruit cultivation, a practice with ancient roots, has become a more intensive area of agricultural production through various technical and technological advancements. The breeding and use of fruit rootstocks are among the most important of these developments. In fruit growing, rootstocks are used for multiple purposes and significantly influence the species and varieties to be cultivated in various ways. The use of rootstocks allows for the adjustment of plant growth characteristics according to specific objectives, offering cultivation possibilities in soils with growing constraints. Rootstocks for species such as apple, quince, and almond are commonly used and

ISBN NR. : 978-625-6283-85-5

widespread in Turkish fruit cultivation. Walnut, a hard-shelled fruit, is an important and valuable crop for many countries, including Turkey. Numerous studies have been conducted on its cultivation and breeding, and research continues. While the use of rootstocks in walnut cultivation has begun in some countries, the application and knowledge of this practice in Turkey are almost nonexistent.

In this study, information and research on the use of rootstocks in walnut species will be presented, with a focus on the potential for using walnut rootstocks in walnut cultivation in Turkey.

Keywords: Walnut, rootstock, *Juglans regia*

ISBN NR. : 978-625-6283-85-5

EFFECTS OF ABIOTIC STRESS FACTORS ON FRUIT SPECIES BIODIVERSITY

Assoc. Prof. Dr. Servet ARAS
Yozgat Bozok University, servet.aras@yobu.edu.tr - ORCID ID: 0000-0002-0347-6552
Assoc. Prof. Dr. Müjgan GÜNEY
Yozgat Bozok University, mujgan.guney@yobu.edu.tr - ORCID ID: 0000-0001-5491-1430
Assist. Prof. Dr. Gökçe AYDONER ÇOBAN
Yozgat Bozok University, gokce.aydoner@yobu.edu.tr - ORCID ID: 0000-0002-0851-8803

ABSTRACT

Abiotic stress factors such as temperature extremes, water availability, soil salinity, and pollution can have profound effects on the biodiversity of fruit species. Here are some key effects. Heat Stress: Elevated temperatures can reduce fruit set, size, and quality. Some species may not survive or reproduce effectively, leading to a decrease in biodiversity. Cold Stress: Frost and cold temperatures can damage fruit tissues, reducing yield and potentially killing plants not adapted to such conditions. Species with low cold tolerance may decline in number or disappear from certain areas. Water scarcity can lead to reduced fruit size, quality, and yield. Species that are not drought-tolerant may be outcompeted by more resilient species, leading to a reduction in biodiversity. Flooding: Excess water can cause root hypoxia, leading to poor plant health and reduced fruit production. Species that cannot tolerate waterlogged conditions may decline. High salt concentrations in the soil can impair plant water uptake and lead to physiological stress. Sensitive species may suffer reduced growth and reproductive success, potentially leading to decreased biodiversity as more salt-tolerant species dominate. Overall, abiotic stress factors can create challenging conditions for fruit species, leading to shifts in species composition, reductions in genetic diversity, and changes in ecosystem dynamics. Adaptation to these stressors varies among species, influencing which species thrive and which decline, thereby affecting overall biodiversity. In the present review, effects of common abiotic stress factors on fruit species biodiversity are discussed.
Anahtar Kelimeler: Abiotic Stress, Drought, Fruit, Salinity

ABİYOTİK STRES FAKTÖRLERİNİN MEYVE TÜRLERİNİN BİYOÇEŞİTLİLİĞİ ÜZERİNDEKİ ETKİLERİ

ÖZET

Aşırı sıcaklıklar, su mevcudiyeti, toprak tuzluluğu ve kirlilik gibi abiyotik stres faktörlerinin meyve türlerinin biyolojik çeşitliliği üzerinde derin etkileri olabilir. İşte bazı önemli etkiler. Isı Stresi: Yüksek sıcaklıklar meyve tutumunu, boyutunu ve kalitesini azaltabilir. Bazı türler hayatta kalamayabilir veya etkili bir şekilde çoğalamayabilir, bu da biyolojik çeşitliliğin azalmasına yol açabilir. Soğuk Stresi: Don ve soğuk sıcaklıklar meyve dokularına zarar verebilir, verimi azaltabilir ve potansiyel olarak bu koşullara uyum sağlayamayan bitkileri öldürebilir. Soğuğa toleransı düşük olan türlerin sayısı azalabilir veya bazı bölgelerde yok olabilir. Su kıtlığı meyve boyutunun, kalitesinin ve veriminin azalmasına neden olabilir. Kuraklığa dayanıklı olmayan türler, daha dirençli türler tarafından rekabette geride bırakılabilir

ISBN NR. : 978-625-6283-85-5

ve bu da biyolojik çeşitliliğin azalmasına yol açabilir. Su baskını: Aşırı su, kök hipoksisine neden olabilir, bu da bitki sağlığının bozulmasına ve meyve üretiminin azalmasına neden olabilir. Suyla dolu koşulları tolere edemeyen türlerin sayısı azalabilir. Topraktaki yüksek tuz konsantrasyonları bitkinin su alımını bozabilir ve fizyolojik strese yol açabilir. Hassas türlerin büyümesi ve üreme başarısı azalabilir, bu da tuza dayanıklı türlerin baskın olması nedeniyle potansiyel olarak biyolojik çeşitliliğin azalmasına yol açabilir. Genel olarak abiyotik stres faktörleri, meyve türleri için zorlayıcı koşullar yaratarak tür kompozisyonunda değişimlere, genetik çeşitlilikte azalmalara ve ekosistem dinamiklerinde değişikliklere yol açabilir. Bu stres etkenlerine uyum, türler arasında farklılık gösterir; hangi türün gelişip hangisinin azaldığını etkiler ve dolayısıyla genel biyolojik çeşitliliği etkiler. Bu derlemede yaygın abiyotik stres faktörlerinin meyve türlerinin biyolojik çeşitliliği üzerindeki etkileri tartışılmaktadır.
Anahtar Kelimeler: Abiyotik Stres, Kuraklık, Meyve, Tuzluluk

ISBN NR. : 978-625-6283-85-5

ANATOMICAL ALTERATIONS AFFECT BIODIVERSITY OF FRUIT SPECIES

Assoc. Prof. Dr. Servet ARAS
Yozgat Bozok University, servet.aras@yobu.edu.tr - ORCID ID: 0000-0002-0347-6552
Assoc. Prof. Dr. MURAT GÜNEY
Yozgat Bozok University, murat.guney@yobu.edu.tr - ORCID ID: 0000-0003-2882-8347
Assoc. Prof. Dr. Hakan KELES
Yozgat Bozok University, hakan.keles@yobu.edu.tr - ORCID ID: 0000-0002-8225-931X

ABSTRACT
Anatomical changes in fruit species can significantly impact biodiversity through various mechanisms. Here are some ways in which these changes might affect biodiversity. Genetic Diversity: Anatomical changes often arise from genetic mutations or selective breeding. These genetic changes can either increase or decrease genetic diversity within fruit species populations, depending on whether the alterations lead to new traits or a reduction in genetic variability. Pollination and Seed Dispersal: Changes in fruit anatomy can influence how fruits are pollinated and how seeds are dispersed. For instance, modifications that make fruits more attractive to certain pollinators or animals can affect the reproduction and spread of the species, potentially altering the ecological dynamics of the region. Adaptation to Environment: Anatomical alterations can enhance or diminish a fruit species' ability to adapt to environmental stresses, such as drought, pests, or diseases. These changes can influence the survival and reproductive success of the species, thereby affecting overall biodiversity. In the current review, anatomical adaptations such as stomatal behaviors, xylem functions, wax properties affecting biodiversity are discussed.
Anahtar Kelimeler: Anatomy, Fruit, Xylem, Wax

ANATOMİK DEĞİŞİKLİKLERİN MEYVE TÜRLERİNİN BİYOÇEŞİTLİLİĞİNİ ETKİLEMESİ

ÖZET
Meyve türlerindeki anatomik değişiklikler, çeşitli mekanizmalar yoluyla biyolojik çeşitliliği önemli ölçüde etkileyebilir. İşte bu değişikliklerin biyolojik çeşitliliği etkileyebileceği bazı yollar. Genetik Çeşitlilik: Anatomik değişiklikler sıklıkla genetik mutasyonlardan veya seçici üremeden kaynaklanır. Bu genetik değişiklikler, değişikliklerin yeni özelliklere mi yoksa genetik çeşitlilikte bir azalmaya mı yol açtığına bağlı olarak, meyve türü popülasyonlarındaki genetik çeşitliliği artırabilir veya azaltabilir. Tozlaşma ve Tohum Dağılımı: Meyve anatomisindeki değişiklikler meyvelerin nasıl tozlaştığını ve tohumların nasıl dağıldığını etkileyebilir. Örneğin, meyveleri belirli tozlayıcılar veya hayvanlar için daha çekici hale getiren değişiklikler, türlerin üremesini ve yayılmasını etkileyerek bölgenin ekolojik dinamiklerini potansiyel olarak değiştirebilir. Çevreye Uyum: Anatomik değişiklikler, bir meyve türünün kuraklık, zararlı böcekler veya hastalıklar gibi çevresel streslere uyum sağlama yeteneğini artırabilir veya azaltabilir. Bu değişiklikler türün hayatta kalmasını ve üreme başarısını etkileyebilir, dolayısıyla genel biyolojik çeşitliliği etkileyebilir. Bu derlemede stoma

ISBN NR. : 978-625-6283-85-5

davranışları, ksilem fonksiyonları, mum özellikleri gibi biyoçeşitliliği etkileyen anatomik adaptasyonlar tartışılmaktadır.

Anahtar Kelimeler: Anatomi, Meyve, Ksilem, Mum

ISBN NR. : 978-625-6283-85-5

SSR AND TRANSCRIPTOME ANALYSIS IN HORTICULTURAL FRUITS

Assoc. Prof. Dr. Murat GÜNEY
Yozgat Bozok University, murat.guney@yobu.edu.tr, ORCID ID: https://orcid.org/0000-0003-2882-8347
Assoc. Prof. Dr. Hakan KELES
Yozgat Bozok University, hakan.keles@yobu.edu.tr, ORCID ID: https://orcid.org/0000-0002-8225-931X
Assoc. Prof. Dr. Servet ARAS
Yozgat Bozok University, servet.aras@yobu.edu.tr, ORCID ID: https://orcid.org/0000-0002-0347-6552

ABSTRACT
SSR markers and transcriptome analysis are essential tools in the genetic enhancement and conservation of horticultural fruit crops. SSR markers, known for their high polymorphism and codominance, are widely utilized in genetic mapping, marker-assisted selection (MAS), and germplasm conservation to assess genetic diversity, improve fruit quality, and increase resistance to diseases. Transcriptome analysis, particularly through RNA sequencing (RNA-Seq), has significantly advanced the development of SSR markers by providing a rich source of expressed gene sequences, especially for non-model species. This has enabled more efficient breeding programs and the conservation of genetic resources. Transcriptome-derived SSR markers are instrumental in identifying genetic variation and supporting the development of new, higher-yielding, and more resilient fruit varieties. This review explores the acquisition, application, and implications of SSR markers derived from transcriptome data, emphasizing their vital role in improving productivity and sustaining biodiversity in horticulture.
Keywords: SSR, Transcriptome, Horticulture, Fruits, Genetic Diversity, Breeding, Germplasm Conservation.

ISBN NR. : 978-625-6283-85-5

APPLE (*Malus domestica*) MİRNA EXPRESSION AND HORTICULTURAL IMPLICATIONS

Assoc. Prof. Dr. Murat GÜNEY
Yozgat Bozok University, murat.guney@yobu.edu.tr, ORCID ID: https://orcid.org/0000-0003-2882-8347
Asst. Prof. Dr. Gökçe Aydöner ÇOBAN
Yozgat Bozok University, gokce.aydoner@yobu.edu.tr, ORCID ID: https:// 0000-0002-0851-8803
Assoc. Prof. Dr. Zeynep ERGÜN
Adana Alparslan Türkeş Science and Technology University, zergun@atu.edu.tr
ORCID ID: https://orcid.org/0000-0002-9868-9488

ABSTRACT
MicroRNAs (miRNAs) are critical regulators of gene expression in apple (*Malus domestica*), impacting essential processes such as stress tolerance, fruit development, pigmentation, and disease resistance. Recent studies have identified key miRNAs like miR156, miR482, and miR164, which regulate genes involved in drought and salinity tolerance, as well as pathogen defense mechanisms. Additionally, miRNAs play a significant role in enhancing fruit quality by controlling genes related to cell division and anthocyanin biosynthesis, influencing fruit size and color. Advances in miRNA research have opened up new avenues for genetic improvements in apple cultivation, with applications such as artificial miRNAs (amiRNAs) offering the potential to create apple varieties more resilient to environmental stresses, diseases, and market demands. This review provides a comprehensive overview of miRNA functions in apple and highlights their horticultural applications, offering insights into how miRNA-based genetic strategies can improve apple production and sustainability.
Keywords: *Malus domestica*, MicroRNA, gene regulation, stress response, fruit quality, biotechnology.

ISBN NR. : 978-625-6283-85-5

TOPRAKSIZ TARIMDA BİYOGÜBRE OLARAK *CHLORELLA VULGARIS*'İN POTANSİYEL KULLANIMI

Dr. Öğr. Üyesi GÖKÇE AYDÖNER ÇOBAN*

Yozgat Bozok Üniversitesi, gokce.aydoner@yobu.edu.tr - ORCID ID: 0000-0002-0851-8803

Doç. Dr. HAKAN KELES

Yozgat Bozok Üniversitesi, hakan.keles.@yobu.edu.tr - ORC ID: 0000-0002-8225-931X

Doç. Dr. MURAT GÜNEY

Yozgat Bozok Üniversitesi, murat.guney@yobu.edu.tr - ORCID ID: 0000-0003-2882-8347

ÖZET

Dünya nüfusunun artışıyla birlikte bitkisel üretime olan talep de hızla artış göstermektedir. Bununla birlikte tarıma elverişli alanlar günden güne azalmakta olup, topraksız tarım üretimine yönelişte artışlar gözlenmiştir. Topraksız tarım üretiminde birim alandan daha fazla ürün alınmakta ve verim artmaktadır. Topraksız tarımda bitkilerin ihtiyaç duyduğu gübreler bitki kök bölgesine besin eriği yöntemiyle uygulanmakta bu yüzden gübreleme doğru ve dengeli bir şekilde yapılmalıdır. Çevresel zarara yol açan yoğun gübre kullanımının azaltılmasına olanak sağlayan mikroorganizmalar, besin elementlerinin döngüsünde görev aldıkları için sürdürülebilirlik açısından önemli bir rol oynamaktadır. Bu bağlamda, *Chlorella vulgaris* gibi mikroalgler, topraksız tarımda biyogübre olarak kullanılarak hem gübre kullanımını azaltmakta hem de bitki büyümesini desteklemektedir. Bu çalışmanın amacı, *Chlorella vulgaris*'in topraksız tarım kültüründe biyogübre olarak kullanım potansiyelini incelemektir. Özellikle bitki gelişimi, verim artışı ve besin tasarrufu üzerindeki potansiyel etkileri değerlendirilecektir. Bu derleme, sürdürülebilir tarım ve gübre tasarrufu stratejileri için önemli bilgiler sunabilir.

Anahtar Kelimeler: *Chlorella vulgaris*, Topraksız tarım, Biyogübre

ISBN NR. : 978-625-6283-85-5

THE POTENTIAL USE OF CHLORELLA VULGARIS AS A BIOFERTILIZER IN SOILLESS CULTURE

Assist. Prof. Dr. GÖKÇE AYDÖNER ÇOBAN

Yozgat Bozok University, gokce.aydoner@yobu.edu.tr - ORCID ID: 0000-0002-0851-8803

Assoc. Prof. Dr. HAKAN KELES

Yozgat Bozok University, hakan.keles.@yobu.edu.tr -ORCID ID: 0000-0002-8225-931X

Assoc. Prof. Dr. MURAT GÜNEY

Yozgat Bozok University, murat.guney@yobu.edu.tr - ORCID ID: 0000-0003-2882-8347

ABSTRACT

The increasing world population has led to a rapid rise in the demand for plant production. However, arable lands are decreasing day by day and there has been an increase in the tendency towards soilless agriculture production. In soilless culture production, more products are obtained from the unit area and the yield increases. In soilless culture, the fertilizers needed by the plants are applied to the plant root zone with the nutrient solution method, so fertilization should be done correctly and balanced. Microorganisms, which allow the reduction of intensive fertilizer use that causes environmental damage, play an important role in terms of sustainability since they take part in the nutrient cycle. In this context, microalgae such as *Chlorella vulgaris* are used as biofertilizers in soilless agriculture, both reducing fertilizer use and supporting plant growth. The aim of this study is to examine the potential use of *Chlorella vulgaris* as a biofertilizer in soilless agriculture culture. In particular, its potential effects on plant development, yield increase and nutrient saving will be evaluated. This review can provide important information for sustainable agriculture and fertilizer saving strategies.

Key words: *Chlorella vulgaris*, soilless farming, Biofertilizer

ISBN NR. : 978-625-6283-85-5

SEBZELERDE STRES TOLERANSINI ARTIRMAK İÇİN KULLANILAN BAZI AMİNO ASİTLER VE ETKİLERİ

Dr. Öğr. Üyesi GÖKÇE AYDÖNER ÇOBAN*

Yozgat Bozok Üniversitesi, gokce.aydoner@yobu.edu.tr - ORCID ID: 0000-0002-0851-8803

Doç. Dr. ZEYNEP ERGÜN

Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, zergun@atu.edu.tr - ORC ID:0000-0002-9868-9488

Doç. Dr. SERVET ARAS

Yozgat Bozok Üniversitesi, servet.aras@yobu.edu.tr - ORCID ID: 0000-0002-0347-6552

ÖZET

Küresel iklim değişikliği, sebze üretiminde verim ve kaliteyi olumsuz etkileyen abiyotik stres faktörlerinin (kuraklık, tuzluluk, yüksek ve düşük sıcaklık, ağır metal toksisitesi gibi) varlığını daha çok hissettirmesine neden olmaktadır. Abiyotik stresler, bitkilerin fizyolojik ve biyokimyasal süreçlerinde tahribata yol açarak büyüme ve gelişme üzerinde ciddi baskılar oluştururlar. Bu streslere karşı bitkiler, savunma mekanizmalarını devreye sokarak hücre yapısının korunması ve metabolik süreçlerin düzenlenmesi için amino asitler gibi çeşitli metabolitler sentezlerler. Son yıllarda yapılan bilimsel araştırmalar, abiyotik streslerin bitkiler üzerindeki olumsuz etkilerini azaltma stratejilerine odaklanmış, bu bağlamda eksojen amino asit uygulamaları dikkat çekici sonuçlar vermiştir.

Amino asitler, hücresel osmotik dengeyi koruma, antioksidan savunmayı güçlendirme ve stres sinyalleme mekanizmalarında önemli roller oynamaktadır. Eksojen olarak uygulanan amino asitler ise, bitkilerin stres toleransını artırmada tamamlayıcı bir rol üstlenmektedir.

Bu çalışmada, apolar amino asitler (triptofan ve prolin) ve polar amino asitler (asparajin ve glutamin) incelenerek, sebzelerde abiyotik streslere karşı savunma mekanizmalarındaki işlevleri ele alınacaktır. Derleme, sebzelerin abiyotik streslere verdiği fizyolojik tepkileri ve bu amino asitlerin dışsal uygulamalarının stres toleransını artırmadaki potansiyelini değerlendirmeyi amaçlamaktadır. Elde edilen bulgular, amino asitlerin stres yönetimi açısından taşıdığı önemi ortaya koymayı hedeflemektedir.

Anahtar Kelimeler: Sebze, Abiotik stres, Amino Asitler

ISBN NR. : 978-625-6283-85-5

SOME AMINO ACIDS USED TO ENHANCE STRESS TOLERANCE IN VEGETABLES AND THEIR EFFECTS

Assist. Prof. Dr. GÖKÇE AYDÖNER ÇOBAN

Yozgat Bozok University, gokce.aydoner@yobu.edu.tr - ORCID ID: 0000-0002-0851-8803

Assoc. Prof. Dr. ZEYNEP ERGÜN

Adana Alparslan Turkes Science and Technology University, zergun@atu.edu.tr -ORCID ID: 0000-0002-9868-9488

Assoc. Prof. Dr. SERVET ARAS

Yozgat Bozok University, servet.aras@yobu.edu.tr - ORCID ID: 0000-0002-0347-6552

ABSTRACT

The impact of global climate change has exacerbated the presence of abiotic stress factors (including drought, salinity, extreme temperatures, and heavy metal toxicity) that negatively influence the yield and quality of vegetable crops. Abiotic stresses impair the physiological and biochemical functions of plants, leading to substantial limitations on their growth and development. To counteract these stresses, plants trigger defense mechanisms, synthesizing various metabolites such as amino acids to preserve cellular structure and regulate metabolic processes.

Recent studies have increasingly focused on strategies to alleviate the detrimental effects of abiotic stress on plants, with exogenous amino acid applications showing promising outcomes. Amino acids play vital roles in maintaining cellular osmotic homeostasis, strengthening antioxidant defenses, and participating in stress signaling pathways. When applied externally, these amino acids can enhance the plant's innate defense systems, ultimately improving stress tolerance.

This review will investigate the roles of apolar amino acids (tryptophan and proline) and polar amino acids (asparagine and glutamine) in the defense mechanisms of vegetables against abiotic stress conditions. The study aims to assess the physiological responses of vegetable crops to these stresses and evaluate the potential of some exogenous amino acid applications in improving stress tolerance. The results are anticipated to underscore the critical role of amino acids in plant stress management.

Key words: Vegetable, Abiotic stress, Amino acids

ISBN NR. : 978-625-6283-85-5

THE EFFECT OF BLOCKCHAIN TECHNOLOGY ON ACCOUNTING

Assoc. Prof. SERVET SAY

Selçuk University, servetsay@selcuk.edu.tr - 0000-0003-4216-6650

ABSTRACT

The fact that Bitcoin, which was introduced by Satoshi Nakamoto in 2008 into a digital currency that can raise awareness all over the world, has raised the likelihood of every sector to be influenced by this process. Accounting is one of the most affected sectors. The financial transactions of the companies are recorded by the accounting profession on the basis of documents through commercial books. After the registration phase, records are classified by the accounting programs used in computer environments and financial statements are created for the benefit of information users. In the context of changing and developing accounting applications with technological developments, differences arise in the context of presentation in the form of transactions and financial statements. The most important innovation of blockchain technology to accounting applications is shown as converting the traditionally adopted double-sided registration system into a unique feature of the system into a three-sided registration system. The examination of the effects of electronic transformation and blockchain technology on accounting applications is important in terms of guiding information users, especially accountants. In this context, the aim of the study is to examine the effect of blockchain technology on accounting applications.

Keywords: Blockchain, Technological Development, Accounting Applications

ISBN NR. : 978-625-6283-85-5

THE IMPACT OF DIGITAL TRANSFORMATION ON BUSINESS MANAGEMENT AND INNOVATIVE STRATEGIES

Dr., Fatih İbrahim KURŞUNMADEN
Selcuk University, kurtden@selcuk.edu.tr - 0000-0003-4045-9003

ABSTRACT

In today's business world, digital transformation has become inevitable for companies to maintain their competitive edge and achieve sustainable growth. Digital transformation involves the restructuring of business processes, customer relations, employee engagement, and decision-making mechanisms through modern technologies. This transformation process has a multifaceted impact on business management, offering new strategic opportunities in areas such as efficiency, flexibility, speed, and innovation. Digital transformation accelerates decision-making processes in business management and shifts them towards a more data-driven structure. The use of big data and artificial intelligence supports managers in making strategic decisions, minimizing risks, and enabling faster responses to market conditions. Additionally, digital platforms, customer relationship management (CRM), and marketing analytics tools improve the customer experience and increase customer loyalty. Based on this, the primary objective of this study is to provide a general evaluation of the effects of digital transformation processes on business management. To achieve this goal, the study will focus on topics such as artificial intelligence, big data, agile management, automation, customer experience, and data security.

Keywords: Digital Transformation, Business Management, Innovative Strategies

ISBN NR. : 978-625-6283-85-5

DIGITAL TRANSFORMATION IN ACCOUNTING AUDIT

Dr. Fırat KINALI

Selcuk University, firatkinali@selcuk.edu.tr - 0000-0002-4908-4351

In the 21st century, technological developments and innovations all over the world have played a major role in achieving goals that seemed like “dreams” for people in the past. Although technological developments meet the needs of human beings, it is also known that with digitalization and the formation of big data, it is also known how accurate the data movements are and how difficult it has become to ensure their control. In this direction, in order to control big data traffic and strengthen the control points in these movements, the concept of “artificial intelligence” has been included in the system to facilitate digital transformation and is becoming increasingly widespread in the business world and enterprises. Digital transformation has been effective in all sectors and even started to be used intensively. This situation has also led to the emergence of new business models in enterprises. It is a fact that one of the areas most affected by this transformation process is accounting auditing. Accounting audit is defined as a branch of accounting developed to reach an opinion on the accuracy of financial information, documents and data. With the digital transformation, the use of artificial intelligence in the field of accounting audit provides significant benefits to businesses in terms of time, cost, human resources and efficiency. Based on these basic ideas, the aim of the study is to reveal the place and importance of digital transformation and artificial intelligence in the future of audit accounting, which is among the professions undergoing digital transformation, and to make some suggestions about its future status.

Keywords: Accounting Audit, Digital Transformation, Artificial Intelligence

ISBN NR. : 978-625-6283-85-5

USE OF FUZZY EXPERT SYSTEM IN DIAGNOSIS OF CORONAVIRUS (COVIT 19) DISEASE

Lect. Mehmet Nuri ÖDÜK

Selcuk University, mnurioduk@selcuk.edu.tr - ORCID ID:0000-0002-8799-2705

ABSTRACT

Coronaviruses emerged in the world in 1960. The first viruses were seen in chickens. These are infectious bronchitis virus and the subtypes HCoV-229E and HCoV-OC43 that cause colds. The SARS coronavirus emerged in 2003. HCoV NL63 was diagnosed in 2004, HKU1 was diagnosed in 2005, and MERS-CoV in 2012. Then the new coronavirus emerged. Viruses cause respiratory tract infections. The new coronavirus is a large type of virus that can cause disease in animals and humans. A virus is a microbe that causes infectious diseases. Microbes are invisible to the eye. The new coronavirus disease (COVID-19) emerged in an animal market in China in December 2019. It was named Covid-19 due to its emergence in 2019. The symptoms of the disease are fever, cough and shortness of breath. It then spread from person to person and spread throughout the world. It particularly affected the European and American continents. The effect of this disease has been seen in our country. Various variations have emerged over the years. Cases have been detected with the tests conducted by the Ministry of Health and many deaths have occurred.

Fuzzy expert systems have recently been used in every field. The first of these is the medical field. Fuzzy expert systems can be easily applied to every section of the medical field. The importance of the fuzzy expert system is increasing, especially due to the increase in diseases, the diversity of data, the evaluation time of the diagnosis and the errors of experts.

Thanks to this designed fuzzy expert system, the dependency on expert personnel will decrease. The treatment time of the disease will decrease. The success of the treatment process will increase. The quality of the training of experts receiving education in the field of medicine will increase. Patients who will access the system via the internet will easily detect their disease diagnoses if they enter the requested information. Since the designed system is web-based; patients will be informed and the communication disorder between the patient and the doctor will be reduced to the lowest level. It will provide many advantages in terms of saving time, space and labor due to remote access. Fuzzy expert systems method is used in the diagnosis of the new coronavirus disease.

Keywords: Coronavirus(Covid 19), Health, Fuzzy Logic.

ISBN NR. : 978-625-6283-85-5

A COMPREHENSIVE STUDY OF THE KAUP-KUPERSHMIDT EQUATION WITH CONFORMABLE DERIVATIVE

Asst. Prof., MUAMMER ve AYATA

Selcuk University, muammerayata55@gmail.com - 0000-0001-9436-6414

ABSTRACT

This paper investigates the conformable Laplace decomposition method (CLDM) as a tool for finding approximate solutions to the conformable fractional Kaup-Kupershmidt equation. By integrating the Adomian decomposition method with conformable Laplace transforms, the CLDM effectively addresses the complexities associated with fractional derivatives. The Kaup-Kupershmidt equation is pivotal in the study of nonlinear wave dynamics and soliton theory, making this research highly relevant to engineering applications. We analyze how different fractional parameters affect the solutions' characteristics, leading to a deeper understanding of the underlying wave phenomena. Our findings are illustrated through 3D visualizations validating the accuracy of the CLDM against established analytical solutions. The results indicate that the CLDM provides not only precise solutions but also significantly reduces computational workload, making it a valuable method for researchers. This study emphasizes the potential of fractional calculus in modeling intricate nonlinear systems and suggests new avenues for future research. By highlighting the CLDM's effectiveness, we hope to inspire further exploration in the field, ultimately contributing to the advancement of theoretical and applied engineering practices.

Keywords : Kaup-Kupershmidt equation, Laplace decompositon Method, Laplace transform, Conformable derivative, Wave Dynamics

ISBN NR. : 978-625-6283-85-5

INVESTIGATION OF MAIZE GENOTYPES BASED ON SEEDLING AND FIELD TRAITS FOR DROUGHT TOLERANCE

Assoc. Prof. Dr. Sekip ERDAL
sekip.erdal@tarimorman.gov.tr, 0000-0003-1836-530X, Bati Akdeniz Agricultural Research Institute, Antalya-Türkiye
Dr. Akın TEPE
akin.tepe@tarimorman.gov.tr, 0000-0003-0043-1524, Bati Akdeniz Agricultural Research Institute, Antalya-Türkiye
Agricultural Engineer Mehmet PAMUKÇU
mehmet.pamukcu@tarimorman.gov.tr, 0000-0002-2654-3391 Bati Akdeniz Agricultural Research Institute, Antalya-Türkiye
Dr. Senem Sabancı BAL
senem.sabancibal@tarimorman.gov.tr, Bati Akdeniz Agricultural Research Institute, Antalya-Türkiye, 0000-0002-5841-2900
Msc. Burak YILDIZGÖRER
burak.yildizgorer@gmail.com, Akdeniz University · Department of Agricultural Machinery, Antalya-Türkiye

ABSTRACT

Precision phenotyping maize for drought stress is one of the most important challange part during breeding studies. In order to identify drought tolerant maize germplasm, different secreening approaches have been used by the breeders. The objective of this study is to test maize inbred lines and hybrids under both seedling stage drought stress and field reproductive drought stress to see the ability of these to approaches and identify maize genotypes tolerant to drought stress.

Three maize hybrids and their parents totally nine genotypes were used in the study. Genotypes tested under three different water deficits in controlled greenhouse using pods in 2022. The experiment set also tested ander well watered and water stressed conditions in the field conditions.

Our study showed that seedling stage tests in greenhouse conditions may be insufficient alone in determining drought tolerance germplasm, but it could support field phenotyping tests well. Therefore, it can be recommended to conduct seedling period tests together with field trials.

Key words: Water stress, hybrid, tolerance, selection

ISBN NR. : 978-625-6283-85-5

AN OVERVIEW TO THE ACTIVITIES AND ACADEMIC STUDIES IN GREEN MANUFACTURING

Asst. Prof. Dr. Şafak ATAŞ[1],

Karabük University, satas@karabuk.edu.tr – 0000-0003-4124-8929

Assoc. Prof. Dr. Serhat Orkun TAN[2],

Karabük University, serhatorkuntan@karabuk.edu.tr - 0000-0001-6184-5099

Prof. Dr. İlker TÜRKER[3]

Karabük University, iturker@karabuk.edu.tr - 0000-0001-7577-4658

ABSTRACT

Green is a critical term that has gained importance with the developing technology due to concerns such as global warming, environmental pollution, insufficiency of natural resources. Considering these concerns, many studies have been carried out in the field of green manufacturing, which means environmental consciousness in manufacturing and manufacturing-related interventions, in recent years. Engaging in green supply chains and using more renewable energy sources can be achieved through Green Production. Green manufacturing is a reliable and necessary strategy with such reasons as reducing production waste, increasing recycling, and protecting environmental quality. In this study, it is aimed to define the concept of green manufacturing with the help of literature, to examine the research, activities, and investments in this area, and to provide and interpret the statistical information on academic studies by using the Web of Science database.

Keywords: Green manufacturing, Green supply chain, Sustainability, Academic Studies, Statistical Analysis.

ISBN NR. : 978-625-6283-85-5

PRODUCTİON OF ALUMİNA-COPPER HYBRİD COMPOSİTES BY HOT PRESSİNG TECHNİQUE:

INVESTİGATİON OF MECHANİCAL, STRUCTURAL, AND TRİBOLOGİCAL PROPERTİES

Merve HORLU

Aisin Automotive Industry Trade Inc, mervehorlu@gmail.com - 0000-0003-0775-2849

Eda ÇULLU FERŞAT

Aisin Automotive Industry Trade Inc ecullu@aisin.com.tr, 0009-0005-3786-9871

Cevher Kürşat MACİT

Firat University, School of Aviation, Aircraft Airframe-Engine Maintenance,

ckmacit@firat.edu.tr - 0000-0003-0466-7788

Bünyamin AKSAKAL

Firat University, School of Aviation, Aircraft Airframe-Engine Maintenance,

baksakal@firat.edu.tr - 0000-0003-4844-9387

ABSTRACT

Copper (Cu) is widely used as a dynamic electrical contact material due to the demands in the electronics, aerospace, and electric vehicle industries. In this study, a new hybrid composite material was produced by adding Alumina (Al2O3) at certain ratios to Copper (Cu) matrix powders made using powder metallurgy process steps using hot pressing technique. Structural and tribological properties of the hybrid composites produced were investigated. The produced Cu/Al2O3 hybrid composite showed 175% better performance in hardness and 295% better performance in coefficient of friction than the untreated Cu sample. In the weight loss values at the end of the wear test, 9 times lower weight loss occurred in the Cu/Al2O3 hybrid composite. The study's findings indicate that the addition of Al2O3 reinforcement enhances the tribological properties of Cu matrix composites. Further research might explore the potential of incorporating novel hybrid composites.

Keywords: Powder Metallurgy, Metal matrix composites, Copper, Aluminia, Tribology.

ISBN NR. : 978-625-6283-85-5

PEEK CF30 TERMOPLASTİK MALZEMENİN DELİNMESİNDE DELME PARAMETRELERİNİN OPTİMİZASYONU

Doç. Dr. Mehmet BOY
Karabük Üniversitesi, mboy@karabuk.edu.tr- 0000-0003-2471-8001
Doç. Dr. Nafiz YAŞAR
Kütahya Dumlupınar Üniversitesi, nafiz.yasar@dpu.edu.tr- 0000-0002-1427-1384
Doç. Dr. Mehmet Erdi Korkmaz
Karabük Üniversitesi, merdikorkmaz@karabuk.edu.tr- 0000-0002-0481-6002

ÖZET

Bu çalışmada, PEEK CF30 termoplastik malzemenin farklı delme parametrelerinde (kesme hızı, ilerleme ve matkap uç açısı) TiN HSS kaplamalı matkapla delinmesinde delme parametrelerinin itme kuvveti, yüzey pürüzlülüğü ve delaminasyona etkisi incelenmiştir. Delme işlemleri sırasında çok kanallı amplifikatöre bağlanan piezoelektrik dinamometre ile itme kuvvetleri ölçülmüş ve delik çıkışında oluşan delaminasyonun görüntüleri takım mikroskobu ile analiz edilmiştir. Deney tasarımı, Taguchi L27 ortogonal dizinine göre yapılarak Taguchi yöntemine ile delme işleminde kullanılan kesme parametreleri optimize edilmiştir. Ayrıca kesme parametrelerinin itme kuvveti, yüzey pürüzlülüğü ve delaminasyon üzerine etkilerinin belirlenmesi için varyans (ANOVA) analizi yapılmıştır. ANOVA sonuçlarına göre ilerleme ve matkap uç açısının itme kuvveti üzerinde, ilerleme hızının ise yüzey pürüzlülüğü üzerinde, matkap uç açısının delaminasyon üzerinde en önemli faktör olduğu görülmüştür. Optimum yüzey pürüzlülüğü 118° uç açısı, 120 m/dk kesme hızı ve 0,15 mm/dev ilerleme ile, optimum itme kuvveti 118° uç açısı, 40 m/dk kesme hızı ve 0,1 mm/dev ilerleme ile, optimum delaminasyon 118° uç açısı, 40 m/dk kesme hızı ve 0,15 mm/dev ilerleme ile elde edilmiş, böylece optimizasyonun geçerliliği Taguchi yöntemiyle doğrulanmıştır.

Anahtar Kelimeler: İtme kuvveti, yüzey pürüzlülüğü, delaminasyon, PEEK, termoplastik

ISBN NR. : 978-625-6283-85-5

BÖHLER K490 ÇELİĞİNİN SERMET KESİCİ TAKIMLA İŞLNEBİLİRLİĞİNİN ARAŞTIRILMASI

Doç. Dr. Mehmet BOY
Karabük Üniversitesi, mboy@karabuk.edu.tr- 0000-0003-2471-8001
Ahmet AYDİN
Karabük Üniversitesi, ahmetaydin075@gmail.com- 0000-0002-3561-4753

ÖZET

Toz metalurji ile üretilen Böhler K490 Microclean çeliği yüksek aşınma ve tokluk direncine sahip bir soğuk iş takım çeliği olup birçok endüstriyel alanda kullanılmaktadır. Bu çalışmada farklı kesme hızı ve ilerleme miktarlarında PVD kaplamalı sermet kesici takım ile kuru ve buharlı soğuk hava ile işleme şartlarında Böhler K490 çeliğine tornalama yapılmıştır. Tornalama sonrası işleme parametrelerinin yüzey pürüzlülüğüne ve kesici takım performansına etkisi incelenmiştir. En düşük yüzey pürüzlülük değerleri her iki işleme şartında da 300 m/dk kesme hızında ve 0,08 mm/dev ilerleme miktarında elde edilmiştir. Sermet kesici takım incelendiğinde kesici takımlarda yığıntı talaş (BUE), çentik aşınması ve yan kenar aşınması gözlemlenmiştir. Yüksek kesme ve ilerleme hızlarında sermet kesici takımlarda kuru ve buharlı soğuk hava ile işlemede kırılmalar olmuştur. En düşük yan kenar aşınma ve yüzey pürüzlülük değerleri buharlı soğuk hava ile işlemede elde edilmiştir.

Anahtar Kelimeler: Toz metalurjik çelik, yüzey pürüzlülüğü, sermet, takım aşınması, soğuk takım iş çeliği

ISBN NR. : 978-625-6283-85-5

16 EKİM 2024, KALE-MALATYA 5.9 (Mw) DEPREMİNİN YER HAREKETİ KAYITLARININ İNCELENMESİ

Dr.Öğr.Üyesi ÖMER FARUK NEMUTLU
İnşaat Mühendisliği Bölümü, Bingöl Üniversitesi, ofnemutlu@bingol.edu.tr
0000-0001-7841-3911

ÖZET

Son yıllarda 2023 Kahramanmaraş, 2020 Elâzığ gibi yıkıcı depremlerden birçok şehrinin etkilendiği Doğu Anadolu bölgesinde 16 Ekim 2024 günü, Malatya'nın Kale ilçesi merkez üslü 5.9 Mw büyüklüğünde bir deprem meydana geldi. Bu deprem kısa süreli korku ve paniğe neden oldu. Meydana gelen deprem Malatya ve Elâzığ illerinin sınırında bir konumda meydana gelmesi nedeniyle Elazığ'da da şiddetli bir şekilde hissedilmiştir. Elâzığ ilinin yanı sıra Diyarbakır, Bingöl, Sivas gibi şehirler depremin hissedildiği illerin başında gelmektedir. İlk belirlemelere göre önemli can ve mal kaybına rastlanılmamıştır. Meydana gelen deprem nedeniyle Elâzığ ve Malatya'da bazı binalar kısmi olarak göçmüştür. Bazı yaralanmalar dışında resmi olarak bir can kaybı meydana gelmemiştir. Kahramanmaraş depremleri üzerinden çok uzun bir süre geçmemesi nedeniyle insanlar ciddi şekilde depremden etkilendiler. Büyüklük olarak orta büyüklükte bir deprem olarak nitelendirilebilecek depremin ivme değerleri ölçüm alan bazı istasyonlarda büyük değerler almıştır. Afet ve Acil Durum Başkanlığı'na (AFAD) ait istasyonlardan biri olan 4414 numaralı istasyonda ölçülen ivme değerlerinin 0.6 g mertebelerinde olduğu gözlemlenmiştir. Yapılan çalışmada 4414 numaralı istasyona ait davranış spektrumları ile Türkiye Bina Deprem Yönetmeliği 2018'de verilen tasarım ivme spektrumları DD1 ve DD2 yer hareketi seviyeleri için karşılaştırılmıştır. Elde edilen sonuçlara bakıldığında düşük periyot bölgelerinde DD2 yer hareket düzeyine ait spektrumların aşıldığı görülmektedir. Çalışma kapsamında meydana gelen deprem ile ilgili bilgiler verilmiş elde edilen sonuçlar gerekçeleri ile irdelenmiştir.

Anahtar Kelimeler: Kale Depremi, Yer Hareketi Kayıtları, Tasarım Spektrumu, Davranış Spektrumu, Deprem Gözlemi

ISBN NR. : 978-625-6283-85-5

EXAMINATION OF GROUND MOTION RECORDS OF 16 OCTOBER 2024, KALE-MALATYA 5.9 (Mw) EARTHQUAKE

Assist. Prof. Dr. ÖMER FARUK NEMUTLU
Civil Engineering Department, Bingol University, ofnemutlu@bingol.edu.tr
0000-0001-7841-3911

ABSTRACT

On October 16, 2024, an earthquake with a magnitude of 5.9 Mw occurred with the epicenter of the Kale district of Malatya in the Eastern Anatolia region, where many cities have been affected by devastating earthquakes such as 2023 Kahramanmaraş and 2020 Elazig in recent years. This earthquake caused short-term fear and panic. The earthquake was also strongly felt in Elazig as it occurred on the border of Malatya and Elazig provinces. In addition to the province of Elazig, cities such as Diyarbakır, Bingöl and Sivas are among the provinces where the earthquake was felt. According to initial findings, there was no significant loss of life or property. Due to the earthquake, some buildings in Elazig and Malatya partially collapsed. Except for some injuries, there was no official loss of life. Due to the fact that it has not been a long time since the Kahramanmaraş earthquakes, people were seriously affected by the earthquake. The acceleration values of the earthquake, which can be described as a medium-sized earthquake in terms of magnitude, took large values at some stations that took measurements. It was observed that the acceleration values measured at station 4414, one of the stations belonging to the Disaster and Emergency Management Affairs(DEMA), were around 0.6 g. In the study, the behavior spectra of station 4414 and the design acceleration spectra given in the Turkish Seismic Code 2018 were compared for DD1 and DD2 ground motion levels. When the results are examined, it is seen that the spectra of DD2 ground motion level are exceeded in low period regions. Within the scope of the study, information about the earthquake was given and the results obtained were examined with their justifications.

Keywords: Kale Earthquake, Ground Motion Records, Design Spectrum, Response Spectrum, Earthquake Observation

ISBN NR. : 978-625-6283-85-5

EXAMİNATİON OF TRANSPORTATİON PROJECTS PLANNED TO BE CONDUCTED İN BURSA İN TERMS OF FEASİBİLİTY AND APPLİCABİLİTY

Res. Ast., AHMET ÜNAL

Erzurum Technical University, ahmet.unal@erzurum.edu.tr - ORCID ID: 0000-0001-8277-6002

Prof. Dr., Ahmet TORTUM

Atatürk University, atortum@atauni.edu.tr - ORCID ID: 0000-0002-5770-766X

ABSTRACT

With the development of cities, there is a constant increase in the number of people coming from rural areas to big cities. When irregular migration is added to this increase, the problems in the cities are both diversified and increasing day by day. Bursa is the 4th largest city in Turkey in terms of population and is also a bridge in terms of access to other provinces. Due to this important position of Bursa, there is constant migration to Bursa and these migrations bring many problems with them. One of the most important problems of Bursa is the transportation problem. There is no doubt that local and central administrators are looking for solutions to these problems. It is obvious that the projects planned to be carried out in order to find a solution to the traffic problem in Bursa will produce solutions to some problems. However, some of the projects considered as solutions will not contribute to producing the expected solution. In this study, the studies planned to be carried out in the province of Bursa in the coming years are examined and information is provided about them. The positive and negative aspects of these planned studies that will affect the transportation problem of the city if they are carried out are explained.

Key Words: Bursa, Traffic Problem, Traffic Solution, Transportation Projects

ISBN NR. : 978-625-6283-85-5

DETERMINATION OF POINT BASED LIQUEFACTION POTENTIAL FOR KARŞIYAKA DISTRICT OF İZMIR PROVINCE

Dr., ESRA GÜNERİ

İzmir Demokrasi Üniversitesi, esra.guneri@idu.edu.tr - 0000-0002-1840-2118

ABSTRACT

Having sufficient knowledge, data and foresight about the behavior and mechanisms of soils according to soil types is of great importance in preventing irreversible damage. Although the basic mechanism of soil liquefaction is known, in many regions it causes negative consequences after a possible earthquake or dynamic movement as a result of inadequate behavior definitions and calculations. Within the scope of this study, regional-based geotechnical investigations were carried out in Karşıyaka district of İzmir province, sufficient data were collected and liquefaction analysis was performed and evaluated regionally. Data obtained from SPT tests and field experiments made by the ground company were used. Acceleration-time graphs used in the static project are given. The region has been evaluated in terms of its liquefaction risk. Within the available data and as a result of the analyses, it has been determined that this region is at risk of liquefaction. Envisaged improvement methods are stated. At the same time, information and analysis solutions regarding the structure to be built on it were shared.

Keywords: Acceleration, Regional Liquefaction, Risk Assessment, Soil Type.

ISBN NR. : 978-625-6283-85-5

APPLICATION FIELDS OF GEOTECHNICAL ENGINEERING AND IMPORTANCE IN CIVIL ENGINEERING

Dr., ESRA GÜNERİ

İzmir Democracy University, esra.guneri@idu.edu.tr - 0000-0002-1840-2118

ABSTRACT

Civil engineering is a branch of engineering that includes many sub-branches of science, and geotechnical engineering, one of these branches, covers basic sciences such as soil mechanics, foundation construction and soil dynamics. Adequate knowledge of soil mechanics and foundation construction is necessary for the design and evaluation of problems in geotechnical engineering applications. Although the scope of the fields of study of geotechnical engineering is quite wide, the most basic ones can be listed as determining the soil bearing capacity, determining the settlements that they can make depending on time, determining the dimensions and slope angles of earth dams, designing the foundation soil against collapse under dynamic loads such as earthquake loads, determining the soil class to be used in foundation layers of structures such as roads, airports, etc., carrying out compression studies and calculating the lateral soil pressures acting on the retaining structures due to soil and surcharge loads in the design of retaining structures. Geotechnical engineering is a branch of engineering that is also very important in terms of soil-structure interaction and is essential for optimizing the without any problems and safe life of structures from a static perspective. In this study, the areas of use of geotechnical engineering and its importance in civil engineering are emphasized.

Keywords: Behavior, civil, engineering, geotechnics, soil.

ISBN NR. : 978-625-6283-85-5

INVESTIGATION OF THE EFFECT OF CRUSHED ZONE FORMATION WITH SHARP AND BLUNT TYPE BITS ON DRILLABILITY IN DRILLING

Prof. Dr. Nazife Erarslan

İzmir Demokrasi University, İzmir, Turkey, nazife.dogan@idu.edu.tr - ORCID ID: 0000-0002-5202-9644

ABSTRACT

Drilling methods are generally divided into two according to the rotation and impact process. Drillability in rocks is the ability of a drill to penetrate a rock in a given time. In other words, it is the ease of drilling a hole in the rock mass. Drilling speed is measured in m/min, cm/min or mm/min in rock. Parameters related to the machine, equipment and drilling process are controllable parameters, while parameters related to the ground and rock are uncontrollable parameters. In this study, the rock/drill bit interaction area under two types of drill bits (sharp and blunt tip type) and the formation of a crush zone were analysed with the FRANC2D program a finite element analysis method software. The results of the numerical analyses show that the stress distributions and crack propagation in the rock under a drill bit are highly dependent on the shape of the drill bit. According to the results, it is determined that the highest tensile and shear stress values occur in the rock in front of the conical type drill bit, but the crush zone is negligible. On the other hand, it was determined that the lowest tensile stress values developed in the rock under the blunt type drill bit and a very effective crush zone was formed.

Keywords : Crushed zone and drilling, sharp and blunt type drill bits, deep drilling and bit types

ISBN NR. : 978-625-6283-85-5

ROCK FRAGMENTATION IN TUNNELLING WITH LOADING AND UNLOADING CYCLES IN DYNAMIC DISC TECHNOLOGY

Prof. Dr. Nazife Erarslan

İzmir Demokrasi University, nazife.dogan@idu.edu.tr - ORCID ID: 0000-0002-5202-9644

ABSTRACT

In hard rock\ore cutting, usually more than one disc is mounted on the cutter head according to a certain design, allowing the individual cracks formed under each disc cutter to generate rock particles and cutting rock. Two types of cutters are generally used in mechanical rock cutting; drag picks and disc cutters. With disc chisels, highly efficient cutting results are obtained in hard rocks up to 300 MPa. With the development of new technologies, dynamic disc cutting technologies aiming to cut the rock with fatigue have been developed. Rock fragmentation with dynamic cutting disc (DCD) is a dynamic cutting technology that cuts rock as a result of fatigue failures caused by high loading amplitudes and low number of load cycles. The formation of chips in mechanical rock cutting, both in classical and new technologies, is the main subject of all rock cutting theories. While explaining the damage mechanism effective in such a dynamic loading, dynamic/cyclic indentation and rock fatigue mechanisms, which are the closest studies to this mechanism, were analysed. As a result of the numerical analyses, it was found that during loading, a compressive stress zone was formed under the disc and damage zones caused by indirect (induced) tensile stresses were formed around it, while the compressive damage zone became smaller during unloading, whereas the indirect (induced) tensile stress damage zone became considerably larger and extended.

Keywords: Dynamic mechanical rock cutting, tunnelig and dynamic disc cutters, rock damage and dynamic cutting technology

ISBN NR. : 978-625-6283-85-5

GIDA GÜVENCESİ VE GIDA SİSTEMLERİ

Dr. Öğr. Üyesi, NİLGÜN ÖNCÜL

Muğla Sıtkı Koçman Üniversitesi, nilgunoncul@hotmail.com - ORCID ID 0000-0002-2865-7958

ÖZET

Gıda güvencesi kavramı, 1974 Dünya Gıda Konferansında ilk kez küresel hedefler arasına girmiştir. Gıda güvencesi, "bütün insanların aktif ve sağlıklı bir hayat sürdürebilmeleri için gerekli olan gıda ihtiyaçlarını ve gıda önceliklerini karşılayabilmek amacıyla yeterli, güvenli ve besleyici gıdaya fiziksel ve ekonomik bakımdan sürekli erişebilmeleri" şeklinde ifade edilmektedir. Gıda güvensizliği; savaş ve çatışmalar, Rusya-Ukrayna savaşı, artan yaşam maliyeti, yüksek gıda fiyatları, iklim değişikliği ve Covid 19 pandemisinin etkileri sonucunda global bir sorun haline gelmiştir. Bütün bu etkiler sonucunda Dünya genelinde açlık sınırında yaşayan insan sayısı 832 milyona ulaşmıştır. Her insanın gıdaya erişmek temel hakkıdır. Mevcut gıda sistemleri; adil gıda dağıtımı konusunda yetersiz kalmakla birlikte ekosisteme önemli bir yük getirmektedir. Gelenekselden uzaklaşarak üretilen endüstriyel gıdalar sağlığı olumsuz etkilemekte, gıda israfı fazla olmakta ve en önemlisi Dünya da üretilen gıda miktarı fazla olmasına rağmen insanların açlıkla ilgili sorunlarını çözmekten uzaklaştırarak yeni sağlık sorunlarına da sebep olmaktadır. Bu kapsamda; bilim insanlarının çözüm arama ve üretme çalışmaları hızla devam etmektedir. Yerelleşen gıda sistemleri ise geleneksel üretim metotları ile yöresinde üretilen gıdaların üretim ve tüketimlerinin artırılmasına, insan sağlığının korunmasına, yerel ekonomilerin gelişmesine, dışa bağımlılığın azaltılmasına, gıda kültürünün sosyokültürel aktarımının sağlanmasına, kırsaldan kente göçün azaltılmasına, gıda güvencesinin sağlanmasına ve öngörülen gıda krizine karşı tedbirlerin alınmasına katkı sağlayacaktır. Bu noktada; coğrafi işaret gibi sistemlerin daha etkin kullanılması ve izlenebilirliğin sağlanması tüketici güvenini artırarak tüketim alışkanlıklarını değiştirebilecektir. Bu çalışmada; endüstriyel gıda ürünleri, gıda sistemleri ve geleneksel ürünler, gıda güvencesi açısından değerlendirilmiştir.

Anahtar Kelimeler: Gıda güvencesi, Gıda sistemleri, Coğrafi işaret

ISBN NR. : 978-625-6283-85-5

IMPACTS OF LIFE CYCLE ANALYSIS IN THE FOOD INDUSTRY

Dr. Gamze KOR SIMSEK

Dimes Food and Drink Ind. & Inc.gamze.korsimsek@dimes.com.tr -

ORCID ID: 0000-0003-4097-1381

Prof. Dr. Filiz ICIER

Ege University, Engineering Faculty, Food Engineering Department filiz.icier@ege.edu.tr -

ORCID ID: 0000-0002-9555-3390

ABSTRACT

As an environmental impact assessment method, “Life Cycle Assessment” is an analysis method with a wide range of applications in the private sector, public sector and academia for a wide variety of products, services and systems. LCA, which provides holistic analysis for different performance criteria, has important areas of use such as strategic planning, developing public policies and performance indicators, identifying priority products and processes in production, identifying improvement opportunities, providing important inputs during product development or redesign stages, supporting various sustainability declarations, Eco-Label programs, comparing different production alternatives. Thanks to LCA, appropriate data based on ISO standards and scientific basis is provided to environmental label programs developed to internationally certify and declare the environmental performance of various product groups.

The studies which examined the environmental impact of alternative packaging materials, different food processing technologies, different process parameters in various food and beverage productions on an industrial scale were reviewed. The environmental impact of milk and dairy production, production of different types of food and beverages (fruit juice, beer, water, tea, olive oil, rose water and rose oil, ketchup, biscuits, cakes, wafers, etc.) were compared. It was determined that the energy efficiency of the process conditions and the type of packaging material were the most critical factors in different LCA scopes (cradle to grave, door to door, etc.), commonly. Raw material production processes also had a high impact on the environmental impact of the product. It has been evaluated that if the packaging material is recyclable, the environmental impact of the product could be reduced by 81%; with different current food processing methods, and the environmental impact could be reduced by 41%-51%. In addition, the environmental impact of the final product could be reduced by 80% by producing raw material resources with sustainable methods. In this study, it was aimed to contribute valuable information and figure out the current status of the LCA analyses in the industry, list the suggested precautions to the food industry and academy.

Keywords: performance, packaging, process

ISBN NR. : 978-625-6283-85-5

EAR INFLAMMATION IN CATS AND TREATMENT OPTIONS

Prof. Dr. ALİ BİLGİLİ

Ankara University Faculty of Veterinary Medicine, Department of Pharmacology and Toxicology, Ankara, Türkiye, abilgili61@gmail.com, ORCID ID: https://orcid.org/0000-0001-6819-7952

Prof. Dr. BAŞAK HANEDAN

Atatürk University Faculty of Veterinary Medicine, Department of Internal Medicine, Erzurum, Türkiye, fbhanedan@gmail.com, ORCID ID: https://orcid.org/0000-0003-3873-0124

ABSTRACT

External ear inflammation is common in cats. Middle and inner ear inflammation may occur due to chronic and severe external ear inflammation. Factors predisposing to ear inflammation in cats are narrowness of the ear canal, auricle disorders, wetting of the ear canal as a result of humid environments or frequent bathing of the cat, the use of cotton wool for the removal of ear discharges, and damage during cleaning of the ear. Allergies are common causes of ear inflammation and infection in cats. Infections caused by bacteria and yeasts are usually secondary and opportunistic infections. *Staphylococcus* spp., *Pseudomonas aeruginosa*, *Pasteurella multocida*, *Corynebacterium* spp., *Mycoplasma* spp., *Corynebacterium provencense*, *Klebsiella* spp., *Streptococcus* spp. have been isolated in external ear infections of cats. The presence of rod-shaped bacteria and inflammatory cells in the ears of cats indicates a disease state. Causes of ear inflammation are foreign bodies, polyps, cancer, skin diseases, hormone diseases, immune-related diseases, sebaceous gland diseases, intensive ear cleaning and inappropriate drug applications (e.g. hydrogen peroxide and alcohol application). Scientific sources of recent years have been extensively evaluated and information on the most commonly used drugs and drug combinations and treatment options have been given.

Keywords: Cat, ear, inflammation, treatment.

ISBN NR. : 978-625-6283-85-5

KEDİLERDE KULAK YANGISI VE SAĞALTIM SEÇENEKLERİ

ÖZET

Kedilerde dış kulak yangısı yaygın şekilde görülmektedir. Kronik ve şiddetli dış kulak yangısına bağlı olarak orta ve iç kulak yangısı şekillenebilir. Kedilerde kulak yangısına yatkınlık oluşturan faktörler kulak kanalının darlığı, kulak kepçesi bozuklukları, nemli ortamlar ya da kedinin sık şekilde yıkanılması sonucu kulak yolunun ıslanması, kulak akıntılarının uzaklaştırılmasında pamuklu çöplerin kullanılması, kulağın temizlenmesi sırasında oluşan hasarlardır. Alerjiler kedilerde kulak yangısı ve enfeksiyonun yaygın nedenidir. Bakteri ve mayalar tarafından oluşturulan enfeksiyonlar genellikle sekonder ve fırsatçı enfeksiyonlardır. Kedilerin dış kulak yangısında *Staphylococcus* spp., *Pseudomonas aeruginosa*, *Pasteurella multocida*, *Corynebacterium* spp., *Mycoplasma* spp., *Corynebacterium provencense*, *Klebsiella* spp., *Streptococcus* spp. izole edilmiştir. Kedilerin kulaklarında çubuk biçiminde bakteriler ve yangısal hücrelerin bulunması hastalık durumunu gösterir. Kulak yangısının nedenleri yabancı cisimler, polipler, kanser, deri hastalıkları, hormon hastalıkları, immün nedenli hastalıklar, yağ bezi hastalıkları, yoğun kulak temizleme ve uygun olmayan ilaç uygulamaları (örneğin hidrojen peroksit ve alkol uygulaması)'dır. Bu makale kapsamında son yıllara ait bilimsel kaynaklar geniş şekilde irdelenerek sağaltımda en çok kullanılan ilaçlar ve ilaç kombinasyonlarına yönelik olarak sağaltım seçenekleri hakkında geniş şekilde bilgiler verildi.

Anahtar Kelimeler: Kedi, kulak, yangı, sağaltım.

ISBN NR. : 978-625-6283-85-5

KOYUN VE KEÇİLERDE BAKTERİYEL AŞILAR

Prof. Dr. İsmail Aytekin
Afyon Kocatepe Üniversitesi Veteriner Fakültesi
Yabani Hayvan Hastalıkları ve Ekoloji Anabilim dalı
aytekin0331@gmail.com
ORCID: 0000-0001-6794-5453

ÖZET

Koyun ve keçilerin hayatlarını sağlıklı sürdürebilmeleri için koruyucu hekimlikte aşılar çok önemli rol oynar. Bakteriyel hastalıkların kontrol edilmesi, hayvanların yaşamını tehlikeye atabilecek bazı hastalıkları ortaya çıkmadan önlemek ancak aşılarla sağlanır. Bakteriyel hastalıklara karşı geliştirilen aşılar çok uzun yıllardır koruyucu hekimlikte kullanılmaktadır. Aşılar, hastalıklara karşı koruyucu hekimliğin en önemli uygulamalarından biridir. Sonuç olarak bu derlemede koyun ve keçilerde kullanılan bakteriyel aşılar ve önemi vurgulandı.

Anahtar Kelimler: koyun, keçi, bakteri, aşı

BACTERIAL VACCINES IN SHEEP AND GOATS

ABSTRACT

Vaccines play a very important role in preventive medicine in order for sheep and goats to lead a healthy life. Controlling bacterial diseases and preventing some diseases that may endanger the lives of animals before they occur can only be achieved with vaccines. Vaccines developed against bacterial diseases have been used in preventive medicine for many years. Vaccines are one of the most important applications of preventive medicine against diseases. As a result, bacterial vaccines used in sheep and goats and their importance were emphasised in this review.

Key Words: sheep, goats, bacteria, vaccine

ISBN NR. : 978-625-6283-85-5

KOYUN VE KEÇİLERDE VİRAL AŞILAR

Prof. Dr. İsmail Aytekin
Afyon Kocatepe Üniversitesi Veteriner Fakültesi
Yabani Hayvan Hastalıkları ve Ekoloji Anabilim dalı
aytekin0331@gmail.com
ORCID: 0000-0001-6794-5453

ÖZET

Koyun ve keçilerin yaşamlarını sağlıklı yürütebilmeleri için koruyucu hekimlikte aşılar çok önemlidir. Viral hastalıklara karşı geliştirilen aşılar uzun yıllardır koruyucu hekimlikte kullanılmaktadır. Aşılar, viral hastalıklara karşı koruyucu hekimliğin en önemli sahada yapılan uygulamalarındandır. Sonuç olarak bu derlemede hayvanlarda kullanılan viral aşılar ve önemi vurgulandı.

Anahtar Kelimler: koyun, keçi, virus, aşı

VIRAL VACCINES IN SHEEP AND GOATS

ABSTRACT

Vaccines are very important in preventive medicine for sheep and goats to lead a healthy life. Vaccines developed against viral diseases have been used in preventive medicine for many years. Vaccines are one of the most important field applications of preventive medicine against viral diseases. As a result, viral vaccines used in animals and their importance were emphasised in this review.

Key Words: sheep, goats, virus, vaccine

ISBN NR. : 978-625-6283-85-5

ÇİFTLİK HAYVANLARI İÇİN SELENYUM KATKILARININ DEĞERLENDİRİLMESİ

Nuri ALKAN

Ondokuz Mayıs Üniversitesi, nurivet60@gmail.com

ORCID ID: 0009-0008-8526-4465

Doç.Dr. Habip MURUZ

Ondokuz Mayıs Üniversitesi Adı, habip.muruz@omu.edu.tr

ORCID ID: 0000-0002-1975-4545

Özet

Selenyum (Se), hem insanlar hem de hayvanlar için gerekli olan bir eser elementtir ve antioksidan savunma sistemleri, bağışıklık fonksiyonu, üreme sağlığı ve genel verimlilik üzerinde önemli roller oynar. Se'nin biyolojik etkileri, selenoproteinler adı verilen özel proteinler aracılığıyla gerçekleştirilir. Selenoproteinler, özellikle glutatyon peroksidazlar (GSH-Px), tiyoredoksin redüktazlar (TRX'ler) ve iyodotironin deiyodinazlar (DIO'lar) gibi antioksidan enzimlerde önemli roller üstlenir. Hayvan beslenmesinde Se, genellikle inorganik (sodyum selenit [SS]) ve selometiyonin (SeMet) formunda organik (Se-maya [SY], OH-SeMet) formlarda yemlere eklenir. Hayvanları SeMet ile beslemenin, vücutta depo oluşturabilen ve ihtiyaç halinde kullanılabilen bir Se rezervi sağlama açısından inorganik Se'ye göre üstün bulunmuştur. Ancak SY'de SeMet oranının yüksek değişkenlik (%20-75) gösterdiği bildirilmiştir. Buna karşın Se'nin saf kimyasal olarak sentezlenen organik formu olan OH-SeMet'in yalnızca toplam organik Se içeriğini değil aynı zamanda SeMet formundaki Se'nin sabit konsantrasyonunu da garanti edebilmekte (>%98) ve böylece Se'nin sunulmasını garanti altına alabilmektedir. Buna ilaveten bu formun, hayvanların vücut dokularında zamanla biriken ve ihtiyaç anında serbest bırakılabilen bir Se rezervi oluşturduğu, böylece Se'nin uzun süreli etkilerini desteklediği bulunmuştur. Ayrıca OH-SeMet, yüksek stabiliteye sahip olup hem yem katkısı olarak hem de depolama sırasında diğer Se formlarına göre daha üstün bir performans sergilemektedir. Se kaynaklarının karşılaştırıldığı çalışmalar, OH-SeMet'in hemen organik SY ve inorganik Se'ye göre kas dokusunda daha fazla Se birikimi sağladığını göstermiştir. Sonuç olarak, OH-SeMet gibi üçüncü nesil Se formları, hayvanlarda dokusal Se birikimini artırarak büyüme, performans ve sağlık üzerinde olumlu etkiler sağlayan etkili bir Se kaynağı olarak değerlendirilmektedir. Bu durum, özellikle yem alımının azaldığı stres koşullarında hayvanların üretkenliğini sürdürmelerine yardımcı olur.

Anahtar Kelimeler: Çiftlik hayvanı, selenyum, OH-SeMet

ISBN NR. : 978-625-6283-85-5

RUMİNANT ETİNİN FONKSİYONEL YAĞ ASİTLERİ İÇERİĞİNİ İYİLEŞTİREN BESLEME YAKLAŞIMLARI

Nuri ALKAN

Ondokuz Mayıs Üniversitesi, nurivet60@gmail.com

ORCID ID: 0009-0008-8526-4465

Doç.Dr. Habip MURUZ

Ondokuz Mayıs Üniversitesi, habip.muruz@omu.edu.tr

ORCID ID: 0000-0002-1975-4545

Özet

Diyet yağları insan sağlığını olumlu ve olumsuz yönde etkileyebilir; bu yüzden doymamış yağ asitleri (PUFA) açısından zengin gıdalar tercih edilir. Ruminant eti, insan sağlığı için faydalı PUFA'ların önemli bir kaynağıdır. Özellikle, α-linolenik asit (ALA, C18:3 n-3) ve linoleik asit (LA, C18:2 n-6) gibi esansiyel yağ asitleri ve bunların türevleri olan eikosapentaenoik asit (EPA, C20:5 n-3), dokosapentaenoik asit (DPA, C22:5 n-3) ve dokosaheksaenoik asit (DHA, C22:6 n-3) ruminant etinde bulunur. Ayrıca, konjüge linoleik asit (CLA) izomerleri ruminant etinde önemli bir yer tutar. Ancak, rumendeki biyohidrojenasyon süreci n-3 ve n-6 yağ asitlerinin büyük bir kısmını doymuş yağlara dönüştürdüğünden, etin bu yağ asitleriyle zenginleştirilmesi zorlaşmaktadır. Buna rağmen, n-6:n-3 oranını iyileştirmek ve CLA izomerlerini artırmak için çeşitli besleme stratejileri geliştirilmiştir. Çayır-mera veya silaja dayalı besleme, etin n-3 PUFA ve CLA içeriğini artırma konusunda etkili bir yöntemdir. Konsantre ve tahıla dayalı rasyonlar ise ruminant etinde n-6 yağ asitlerinin artmasına ve n-6 oranının yükselmesine yol açabilir. Tahıl ağırlıklı beslenen hayvanlarda LA ve diğer n-6 PUFA'lar artarken, n-3 PUFA'lar azalır. Keten tohumu, kanola yağı gibi n-3 yağ asitleri açısından zengin yağ kaynakları, ruminantların etlerindeki ALA, EPA, DHA gibi uzun zincirli PUFA'yı artırma potansiyeline sahiptir. Sonuç olarak, ruminant etinin fonksiyonel yağ asitleri açısından zenginleştirilmesi, hayvanların besleme stratejilerinde yapılacak düzenlemelerle mümkündür. Meraya dayalı beslenme ve uygun yağ kaynakları kullanımı ruminant etinin insan sağlığı için daha faydalı hale getirilmesine yardımcı olabilir.

Anahtar kelimeler: Kırmızı et, yağ asitleri, besleme stratejisi

ISBN NR. : 978-625-6283-85-5

DISASTER RISK ASSESSMENT OF URBAN TRANSFORMATION PROJECT AREAS: THE CASE OF KAHRAMANMARAŞ

Lecturer. Dr. Sıtkı Alper ÖZDEMİR

İskenderun Technical University, Iskenderun Vocational School of Higher Education, Construction Department Hatay / Türkiye, salper.ozdemir@iste.edu.tr-0000-0001-7331-8026

Prof. Dr. Mustafa Tolga ÇÖĞÜRCÜ

Konya Technical University, Faculty of Engineering and Natural Sciences, Civil Engineering Department, Konya / Türkiye, mtcogurcu@ktun.edu.tr-0000-0002-2487-797X

Res. Asst. Mehmet Akif ARSLAN

Konya Technical University, Faculty of Engineering and Natural Sciences, Civil Engineering Department, Konya / Türkiye, maarslan@ktun.edu.tr- 0000-0003-3220-0739

Asst. Prof. Dr. Mustafa ONÜÇYILDIZ

Konya Technical University, Faculty of Engineering and Natural Sciences, Civil Engineering Department, Konya / Türkiye, monucyildiz@ktun.edu.tr- 0000-0003-0811-9017

ABSTRACT

The earthquakes centered in Kahramanmaraş on February 6, 2023 resulted in thousands of casualties and major structural destruction. In the process of reconstruction of cities and structures, urban transformation project areas were declared with the work carried out by the Ministry of Environment, Urbanization and Climate Change. There are 18 urban transformation project areas in Kahramanmaraş center with the declaration. In this study, the status of 18 urban transformation project areas within the borders of Kahramanmaraş center Onikişubat district and Dulkadiroğlu district, affected by the existing fault lines and the liquefaction potential of these areas in the ground were examined. The risk factors of these urban transformation project areas, which were examined in terms of disaster risk scenarios, were revealed and the situations to be considered in the reconstruction process were analyzed.

Keywords: Urban transformation, project areas, disaster risks, fault line effects, ground liquefaction.

ISBN NR. : 978-625-6283-85-5

USE OF INNOVATIVE TECHNOLOGIES IN CONSTRUCTION OCCUPATIONAL HEALTH AND SAFETY

Res. Asst. Mehmet Akif ARSLAN

Konya Technical University, Faculty of Engineering and Natural Sciences, Civil Engineering Department, Konya / Türkiye, maarslan@ktun.edu.tr- 0000-0003-3220-0739

Prof. Dr. Mustafa Tolga ÇÖĞÜRCÜ

Konya Technical University, Faculty of Engineering and Natural Sciences, Civil Engineering Department, Konya / Türkiye, mtcogurcu@ktun.edu.tr-0000-0002-2487-797X

Lecturer. Dr. Sıtkı Alper ÖZDEMİR,

İskenderun Technical University, Iskenderun Vocational School of Higher Education, Construction Department Hatay / Türkiye, salper.ozdemir@iste.edu.tr-0000-0001-7331-8026

Asst. Prof. Dr. Mustafa ONÜÇYILDIZ

Konya Technical University, Faculty of Engineering and Natural Sciences, Civil Engineering Department, Konya / Türkiye, monucyildiz@ktun.edu.tr- 0000-0003-0811-9017

ABSTRACT

Construction works are classified as works that involve high risk in terms of Occupational Health and Safety. Stakeholders in the sector should prioritize ensuring workplace safety and giving workers a safe environment. Thus, the use of technological breakthroughs is explored as a solution to this issue. Artificial intelligence, wearable technology, virtual and augmented reality, and sensors are some examples of these innovative technologies. In this study, research on the use of innovative technologies within the scope of OHS was examined. The technologies that can be used for OHS in the construction industry, their advantages and challenges are discussed in general terms.

Keywords: Occupational Health, Safety, Technology

ISBN NR. : 978-625-6283-85-5

INSIGHTS INTO THE RESPONSE OF NEIGHBORING BUILDINGS

Doç.Dr. ELİF ÇAĞDA KANDEMİR

İzmir Democracy University, elifcagda.kandemir@idu.edu.tr - 0000-0002-9190-7120

ABSTRACT

Understanding the seismic response of adjacent structures is essential for ensuring safety and resilience during seismic events. This study utilizes the concept of response spectra as a tool to evaluate the behavior of adjacent buildings. By simulating various earthquake scenarios and analyzing the interaction between closely spaced structures, the effects of structural pounding to the structural responses has been investigated. The response spectra have been generated for pounding force and acceleration due to different periods and seismic gaps, providing insight into the dynamic behavior of each structure under varying conditions. Key factors, such as the distance between buildings and structural characteristics, are examined to identify potential vulnerabilities. The findings ensure the importance of considering adjacent structures in seismic design and the need for updated building codes that address the risks associated with structural interaction. This research aims to contribute to the development of safer building practices that enhance the resilience of communities facing earthquake threats.

Keywords : response spectra, adjacent building, earthquake

ISBN NR. : 978-625-6283-85-5

SEISMIC DAMAGE TO ADJACENT STRUCTURES: A HISTORICAL PERSPECTIVE

Doç.Dr. ELİF ÇAĞDA KANDEMİR

İzmir Democracy University, elifcagda.kandemir@idu.edu.tr - 0000-0002-9190-7120

ABSTRACT

Understanding the impact of seismic events on adjacent structures is crucial for improving building safety and resilience, particularly in densely populated city centres with extensive housing. In the past, many instances of damage, and even destruction, were experienced due to severe earthquakes. This study reviews the historical cases of seismic damage to neighboring buildings, highlighting patterns and lessons learned from the events throughout history. The phenomenon of structural pounding, where adjacent buildings collide during seismic motion, is explored in detail, illustrating how design flaws and insufficient spacing can intensify damage. Additionally, advances in building codes and design practices that have emerged in response to these experiences have been discussed.

Keywords: adjacent structures, seismic damage, historical earthquakes.

ISBN NR. : 978-625-6283-85-5

AKDENİZ HAVZASINDA YER ALAN VERNAKÜLER MİMARİ ÖRNEKLERİN SÜRDÜRÜLEBİLİRLİK BAĞLAMINDA KARŞILAŞTIRMALI BİR DEĞERLENDİRMESİ

ALBAİCİN VE KALEİÇİ ÖRNEKLERİ

Mimar, BESTE TAŞ

Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, Lisansüstü Eğitim Enstitüsü, Mimarlık Anabilim Dalı, Adana, Türkiye, bestetas1@hotmail.com

ORCID ID: 0009-0005-2320-9936

Doç. Dr. , GÖKHAN UŞMA

Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, Mimarlık ve Tasarım Fakültesi Mimarlık Bölümü, Adana, Türkiye, gusma@atu.edu.tr

ORCID ID: 0000-0002-7293-123X

ÖZET

İnsan kaynaklı faaliyetlerle yoğunlaşan iklim değişikliği ve sonucunda yaşanan aşırı hava olayları, doğal ekosistemlerle ilişki kuran sürdürülebilir niteliklere sahip yapı yapma ihtiyacını doğurmuştur. Vernaküler mimari iklimsel verileri kullanması ve bulunduğu bölgeye topoğrafya yerleşimi, malzeme seçimi gibi unsurlarla uyumlanması ile bilinen sürdürülebilir niteliklere sahip yapı üretme biçimidir. Bu bağlamda ele alınan ve iklimde yaşanan değişimin somut olarak gözlendiği Akdeniz havzası, sahip olduğu vernaküler mimari miras ile iklime duyarlı, sürdürülebilir tasarım örneklerine ev sahipliği yapmaktadır. Akdeniz havzasında yer alan ülkelerden İspanya ve Türkiye'den seçilen, Albaicin ve Kaleiçi bölgeleri bu çalışma kapsamında iklime duyarlı tasarım nitelikleri ile ele alınmıştır. Granada kentinin kuzeydoğusunda bulunan Albaicin bölgesi ortaçağa kadar uzanan bir geçmişe ve Mağrip dönemine ait vernaküler mimari örneklere ev sahipliği yapmaktadır. Bu tarihi katmanlaşma, Albaicin bölgesinin 1984 yılında Unesco tarafından dünya miras listesine alınmasını sağlamıştır. Kaleiçi ise; tarihi değeri yüksek, antik dönemlere uzanan geçmişi ve geleneksel Türk evine özgü yapılarıyla sıcak nemli iklime uyumlanmış bir bölgedir. Kaleiçi bölgesi kentsel ve III. derece arkeolojik sit alanı olarak korunmaktadır. Her iki bölgeye ait yapılar geniş kapsamlı bir literatür taraması yapılarak derlenen, vernaküler mimari sürdürülebilirlik kriterleri üzerinden değerlendirilmiştir. Değerlendirme adına; kent planlaması, bina formu, mekan kurgusu, açıklık boyutları, kullanılan renk, yapı malzemeleri ve termal kütleleri, peyzaj ve su ögesi ile mikroklima yaratımı, topoğrafyaya uyum, yönlenme, gölgeleme ve havalandırma yöntemleri başlıkları seçilmiştir. Değerlendirmeler tablo haline getirilerek, her iki bölgenin kendine özgü yapı yapma biçiminin sürdürülebilirliğe katkısı üzerinde durulmuş ve benzeşen,

ayrışan ögelere değinilmiştir. Bu anlamda çalışmanın, Akdeniz havzasındaki vernaküler mimari mirasın sürdürülebilirliğe katkısı fikri ile literatüre kazandırılması amaçlanmıştır. Genel anlamda iki bölgedeki geleneksel yapılar; topoğrafyaya yerleşim, mekan kurgusu, yönlenme, yapı stoğu yoğunluğu, malzeme seçimleri ve uygulama biçimleri, avlu kullanımı ve avluda yer alan birimleriyle benzer bulunmuştur. Geleneksel Türk evine özgü cumba kullanımı, geniş saçaklarla yaratılan gölgeleme gibi unsurlar Albaicin bölgesi yapılarında bulunmamaktadır. Elde edilen veriler karşılaştırma ve sonuç bölümünde detaylı olarak ele alınmıştır.

Anahtar Kelimeler : vernaküler mimari, akdeniz havzası, iklim değişikliği, sürdürülebilirlik, sürdürülebilir kalkınma

SUSTAINABLE ARCHITECTURE IN THE MEDITERRANEAN BASIN: COMPARATIVE INSIGHTS INTO VERNACULAR PRACTICES IN ALBAICÍN AND KALEİÇİ

Architect, BESTE TAŞ

Adana Alparslan Türkeş Science and Technology University, Institute of Graduate School, Department of Architecture, Adana, Türkiye, bestetas1@hotmail.com

ORCID ID: 0009-0005-2320-9936

Assoc. Prof., GÖKHAN UŞMA

Adana Alparslan Türkeş Science and Technology University, Faculty of Architecture and Design, Department of Architecture, Adana, Türkiye, usmagokhan@gmail.com

ORCID ID: 0000-0002-7293-123X

ABSTRACT

Climate change, intensified by anthropogenic activities and the resulting extreme weather events, has necessitated the development of sustainable buildings that harmonize with natural ecosystems. Vernacular architecture is a type of building approach characterized by sustainable qualities, particularly its use of climatic data and adaptation to local conditions through elements such as topography, layout, and material selection. The Mediterranean basin, a region where the impacts of climate change are concretely observed, contains numerous examples of climate-responsive and sustainable designs within its vernacular architectural heritage. This study examines the Albaicín in Spain and Kaleiçi in Türkiye, two regions within the Mediterranean basin, to explore their climate-sensitive architectural practices. The Albaicín

ISBN NR. : 978-625-6283-85-5

district, located northeast of Granada, features examples of vernacular architecture that date back to the Middle Ages and the Maghreb period. This rich historical layering led to the inclusion of the Albaicín on UNESCO's World Heritage List in 1984. Kaleiçi, in contrast, is an area of significant historical value, with roots extending to antiquity and traditional Turkish housing architecture adapted to a hot and humid climate. The Kaleiçi area is protected as an urban site and a third-degree archaeological site. The buildings in both regions were assessed based on vernacular architectural sustainability criteria established through an extensive literature review. For this evaluation, criteria such as urban planning, building form, spatial organization, opening dimensions, color, building materials and thermal mass, landscape and water elements, microclimate creation, adaptation to topography, orientation, shading, and ventilation methods were selected. The evaluations were tabulated to highlight the contribution of the unique architectural styles of both regions to sustainability, as well as to identify their similarities and differences. In this context, the study aims to contribute to the literature by examining the role of vernacular architectural heritage in the Mediterranean basin in promoting sustainability. Overall, traditional buildings in both regions were found to share similarities in terms of topography, spatial organization, orientation, building stock density, material choices and application methods, the use of courtyards, and units located within the courtyard. However, elements specific to traditional Turkish houses, such as the use of bay windows and the shading provided by wide eaves, are absent in the architecture of the Albaicín region. The findings are discussed in detail in the comparison and conclusion sections.

Keywords: sustainability, climate change, vernacular architecture, Mediterranean basin, sustainable development.

ISBN NR. : 978-625-6283-85-5

WATER RECYCLING IN SUSTAINABLE HOUSING AND ITS IMPACT ON DESIGN

Architect Fatma Tuba YILDIRIM
Adana Alparslan Türkeş Science and Technology University, Institute of Graduate School, Department of Architecture, Adana, Türkiye, tuba.yildirim98@gmail.com
ORCID ID: 0009-0009-7197-149X
Assoc. Prof. Dr. Gökhan UŞMA
Adana Alparslan Türkeş Science and Technology University, Faculty of Architecture and Design, Department of Architecture, Adana, Türkiye, usmagokhan@gmail.com
ORCID ID: 0000-0002-7293-123X

ABSTRACT

The continuous increase in the global population has further heightened the importance of water resources. As one of humanity's fundamental needs, water is also utilized in various sectors such as industry, energy production, tourism, and sustainable agriculture. The active and constant use of water is one of the critical drivers of transformation in energy-efficient buildings and environments. This study examines the recycling of water in sustainable housing and its impact on architectural design. Sustainable buildings are certified by international or local commissions. In these buildings, water usage is integrated into passive systems, with rainwater and wastewater being collected. Water collection systems vary in roof design and structure. For the purpose of this study, six buildings were selected. Roof designs and storage units were analyzed and tabulated to assess their impact on design. Climate, precipitation patterns, and solar angles were also considered. According to the study's findings, roof slopes, underground storage areas, and water purification systems provide significant advantages in the use and recycling of water. Water recycling, identified as a crucial factor for sustainability, can help prevent future adverse conditions. Beyond reducing water consumption, it also decreases dependency on external water supplies, promoting self-sufficiency within buildings. Furthermore, integrating water recycling systems into architectural design not only enhances resource efficiency but also contributes to the resilience of buildings in the face of climate change. As cities continue to grow and water scarcity becomes a more pressing issue, these systems will play an essential role in ensuring sustainable urban development.

Keywords: Sustainable housing, Energy-efficient design, Recycling, Water, Roof Design

ISBN NR. : 978-625-6283-85-5

YOĞUN BAKIM ÜNİTESİNDE TELE-TIP UYGULAMALARI

Pınar AYVAT[1]

[1]İzmir Demokrasi Üniversitesi, Tıp Fakültesi, Anestezi ve Reanimasyon AD,

drpinarunde@yahoo.com - ORCID ID: 0000-0002-9941-3109

Başak YAVUZ[2]

[2]İzmir Demokrasi Üniversitesi, Tıp Fakültesi, Histoloji AD, basakyavuz@idu.edu.tr -

ORCID ID: 0000-0003-1817-2241

Nurbanu SEZAK[3]

[3]İzmir Demokrasi Üniversitesi, Tıp Fakültesi, Enfeksiyon Hastalıkları AD,

drsezak@yahoo.com - ORCID ID: 0000-0001-9472-1340

ÖZET

Yaşlı nüfusunun artmasıyla yoğun bakımlara artan talebin yanı sıra, ihtiyaç duyulan sağlık personeli sayısında azalma bir tezat oluşturmaktadır. Tele-tıp bu konuya bir çözüm olabilme umudunu taşımaktadır. Yoğun bakım hekimine destek olarak çeşitli uzaktan tıbbi çözümler geliştirilmiştir. Yoğun bakım ünitesi için geliştirilen yeni tele tıp modellerinde, tele tıp en iyi uygulama yönergelerine ve süreç kalitesi göstergelerine uyumu artırmak için kullanılabilir. Ayrıca, süreç kalitesi göstergeleri, işlevsel sonuçlar ve yaşam kalitesi ölçümleri sonuçların değerlendirilmesine dahil edilmelidir. Bu araştırma ile, mevcut modellerin incelemesi ve her yoğun bakım kliniğinin ihtiyacına göre tele tıp modeli geliştirilmesi hedeflenmiştir.

Anahtar Kelimeler: Yoğun bakım, tele-tıp, yaşam kalitesi ölçümleri, hastane yatış süresi

ISBN NR. : 978-625-6283-85-5

AVRUPA'DA DİŞ HEKİMLİĞİ EĞİTİMİ

Taylan ÇETİNER[1]

[1]Karadeniz Teknik Üniversitesi, Diş Hekimliği Fakültesi, Endodonti Bilimdalı

- ORCID ID: 0009-0005-9107-4375

Pınar AYVAT[2]

[2]İzmir Demokrasi Üniversitesi, Anestezi ve Reanimasyon Anabilimdalı

drpinarunde@yahoo.com - ORCID ID: 0000-0002-9941-3109

Gülşah ŞEHİTOĞLU ALPAĞUT[3]

[3] İzmir Buca Seyfi Demirsoy Eğitim ve Araştırma Hastanesi Acil Servis Kliniği

gulsahsehitoglu@gmail.com- ORCID ID: 0000-0002-6493-7797

ÖZET

Bu tezde Avrupa'daki diş hekimliği eğitiminin nasıl işlediği, müfredatındaki temel şeyler ve korona sürecinde diş hekimliği eğitiminin nasıl devam ettiği anlatılmakla birlikte diş hekimliği eğitimini iyileştirmek için yapılabilecek bazı eylemlerle ilgili tavsiyeler verilmiştir. Sağlığımızı emanet edeceğimiz hekim meslektaşlarımızın bilim ve bilim eğitimi açısından gelişmiş olan Avrupa'da nasıl eğitim gördüğü öğrenilerek, bu eğitimden kendi ülkemizde yapılan diş hekimliği eğitimine hangi yönde düzenlemeler yaparak ülkemizdeki diş hekimliği eğitimini geliştirebileceğimiz anlamak amaçlamıştır.

Anahtar kelimeler: Diş hekimliği, eğitim, Avrupa, denklik, uyum

SUMMARY

This thesis aims to explore how dental education functions in Europe, including its curriculum and the continuation of dental education. Additionally, recommendations are provided for actions that can be taken to improve dental education. By examining how our fellow healthcare professionals, whom we trust with our health, receive education in scientifically advanced Europe, the goal is to understand how we can enhance dental education in our own country by implementing appropriate modifications.

Key words: Dentistry, education, Europe, equivalence, harmony

ISBN NR. : 978-625-6283-85-5

CERRAHİ KLİNİKLERDE BAKIM VEREN HEMŞİRELERİN HASTA MAHREMİYETİNE BAKIŞ AÇILARINI ETKİLEYEN FAKTÖRLER

Araştırma Görevlisi Hatice Eda YOLTAY
Ege Üniversitesi Hemşirelik Fakültesi Cerrahi Hastalıkları Hemşireliği Anabilim Dalı
E-mail: hatice.eda.yoltay@ege.edu.tr,
ORCID ID: https://orcid.org/0000-0002-6493-3374
Meryem YAVUZ van GIERSBERGEN
Ege Üniversitesi Hemşirelik Fakültesi Cerrahi Hastalıkları Hemşireliği Anabilim Dalı
E-mail: meryem.yavuz@ege.edu.tr
ORCID ID: https://orcid.org/0000-0002-8661-0066

ÖZET

Giriş/Amaç: Mahremiyet, hastalar açısından önemli bir konudur. Hastaların mahremiyetine saygılı olmak etik, ahlaki ve bazen toplumsal sorumluluk olarak karşımıza çıkar. Bu açıdan araştırmamızda cerrahi kliniklerde bakım veren hemşirelerin hasta mahremiyetine ilişkin bakış açılarını etkileyen faktörler incelendi.

Yöntem: Cerrahi klinikler hemşirelik bakımlarının fazla olduğu ve hasta mahremiyeti konusunun ön plana çıktığı klinikler olduğu için ele alındı. Hasta mahremiyetine saygı gösterilmesi konusu pek çok yerde vurgulanmıştır. Ancak hasta mahremiyetini etkileyen faktörleri inceleyen araştırmaların sınırlı olduğu görülmüştür. Araştırmamızda literatür ışığında cerrahi kliniklerde asta mahremiyetini etkileyen faktörler vurgulanmıştır.

Bulgular: Araştırmamızda cerrahi kliniklerde çalışan hemşirelerin bakım verirken hasta mahremiyetinde etkili olan faktörler ele alındı. Cerrahi kliniklerde hasta mahremiyetini ilişkin faktörlerin çevresel ve bireysel faktörler olarak ayrıldığı saptandı. Hasta mahremiyetini etkileyen çevresel faktörlerin; klinik çalışma ortam, sağlık personelinin işbirliği ve bakım önceliği olduğu saptandı. Bireysel faktörlerin ise kültürel farklar, yaş, cinsiyet, inanç şekli ve yaşam biçimi durumlar olduğu görüldü.

Sonuç ve öneriler: Sonuç olarak araştırmamızda hasta mahremiyetini etkileyen birçok faktör olduğu görüldü. Ancak etkileyen faktörler geniş perspektifte çevresel ve bireysel faktörler olarak ikiye ayrıldı. Bu faktörlerle ilgili farklı araştırmaların yapılması geniş kapsamlı ele alınmasının sağlayacağı ve hasta mahremiyetinin sağlanmasını iyileştireceği düşünülmektedir.

Anahtar Kelimeler: Hemşirelik, Hasta mahremiyeti, Cerrahi klinik

ISBN NR. : 978-625-6283-85-5

FACTORS AFFECTING NURSES' PERSPECTIVES ON PATIENT PRIVACY IN SURGICAL CLINICS

ABSTRACT

Introduction/Purpose: Privacy is an important issue for patients. Respecting the privacy of patients is an ethical, moral and sometimes social responsibility. In this respect, the factors affecting the perspectives of nurses providing care in surgical clinics regarding patient privacy were analysed in our study.

Method: Surgical clinics were considered because they are clinics where nursing care is high and the issue of patient privacy comes to the fore. The issue of respecting patient privacy has been emphasised in many places. However, it has been observed that studies examining the factors affecting patient privacy are limited. In our study, the factors affecting patient privacy in surgical clinics were emphasised in the light of the literature.

Results: In our study, the factors affecting the patient privacy of nurses working in surgical clinics while providing care were discussed. It was determined that the factors related to patient privacy in surgical clinics were divided into environmental and individual factors. Environmental factors affecting patient privacy were found to be clinical working environment, co-operation of health personnel and priority of care. Individual factors were cultural differences, age, gender, belief style and lifestyle.

Conclusion and Recommendations: In conclusion, our study showed that there are many factors affecting patient privacy. However, the influencing factors were divided into two as environmental and individual factors in a broad perspective. It is thought that conducting different studies on these factors will provide a comprehensive approach and improve the provision of patient privacy.

Keywords: Nursing, Patient privacy, Surgical clinic

ISBN NR. : 978-625-6283-85-5

CERRAHİ KLİNİKLERİNDE ÇALIŞAN HEMŞİRELERİN ÖLÜM VE ÖTANAZİ KONUSUNDAKİ GÖRÜŞLERİ

Araştırma Görevlisi Hatice Eda YOLTAY
Ege Üniversitesi Hemşirelik Fakültesi Cerrahi Hastalıkları Hemşireliği Anabilim Dalı
E-mail: hatice.eda.yoltay@ege.edu.tr,
ORCID ID: https://orcid.org/0000-0002-6493-3374
Meryem YAVUZ van GIERSBERGEN
Ege Üniversitesi Hemşirelik Fakültesi Cerrahi Hastalıkları Hemşireliği Anabilim Dalı
E-mail: meryem.yavuz@ege.edu.tr
ORCID ID: https://orcid.org/0000-0002-8661-0066

ÖZET

Giriş/Amaç: Ötanazi, uluslararası alanda sağlık kuruluşlarında sıklıkla gündemde olan bir konudur. Ötanazi, hiçbir şekilde tedavisi mümkün olmayan, insanda acıma duygusu uyandıran bir hastalıkla yaşamak zorunda olan, hastanın talebiyle, icrai ya da ihmali bir davranışla, tıbbi yoldan hastanın hayatına son verilmesidir. Günümüzde birkaç ülke dışında uygulanmamaktadır. Ülkemizde ötanazi yasal olamamakla birlikte tıp etiği konuları arasında tartışılmaktadır. Hemşirelerin bu konuya ilişkin görüşleri, davranışları ve mevcut tutumlarının belirlenmesi, bunların terminal dönem hasta bakımındaki etkilerinin ortaya konması, bu konularla ilgili sorularının cevabının bulunmaya çalışılması önem kazanmaktadır. Bu nedenle bu araştırma cerrahi kliniklerinden çalışan hemşirelerin ölüm ve ötanazi konusundaki görüşlerini belirlemek amacıyla yapılacaktır.

Yöntem: Araştırma niteliksel tiptedir. Araştırmanın verileri yarı yapılandırılmış odak grup görüşme tekniği ile yüz yüze görüşülerek toplandı. Veri toplama formu 14 sorudan oluştu. Elde edilen veriler, tematik analizi yoluyla analiz edildi.

Bulgular: Araştırmaya katılan hemşirelerin yaş ortalamaları 33.41±5.41'dir. Ötanaziyi/Ölüm tanımlama, ötanazi uygulanması gerektiği düşünülen durumlar, ötanaziyi etkileyen faktörler başlıkları ile üç tema altında, sekiz alt boyutta gruplandırıldı. Hemşirelerin ötanazi konusundaki görüşlerinde hastanın isteğine göre işlem yapılması düşüncesi ön plandaydı. Ayrıca etik boyut ile hasta durumu arasında kaldıklarını ve durumun ötanazi konusundaki düşüncelerini zorlaştırdığını ifade ettiler.

Sonuç ve öneriler: Hemşirelerin ötanazi konusunda bilgi sahibi olduğu, bazı koşullarda ötanazinin uygulanmasının gerekli olduğunu düşündükleri saptandı. Bunun yanında bazı hemşireler tarafından ötanazi uygulamayı etkileyen faktörlerin ülkemizde hala geçerli olduğu ve bu uygulamanın klinik kararlar arasında yer almasının zor olduğu vurgulandı. Ötanazi konusunu etkileyen faktörlerin kapsamlı bir şekilde farklı araştırmalarla ele alınmasının literatüre katkı sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Hemşirelik, Ölüm, Ötanazi,

ISBN NR. : 978-625-6283-85-5

VIEWS OF NURSES WORKING IN SURGICAL CLINICS ON DEATH AND EUTHANASIA

ABSTRACT

Introduction: Euthanasia is an issue that is frequently on the agenda of health institutions in the international arena. Euthanasia is the medical termination of the life of a patient who has to live with a disease that cannot be cured in any way and that arouses compassion in human beings, upon the request of the patient, by an act or negligent behaviour. Today, it is not practised except in a few countries. Although euthanasia cannot be legalised in our country, it is discussed among medical ethics issues. It is important to determine the opinions, behaviours and current attitudes of nurses regarding this issue, to reveal their effects on terminal patient care, and to try to find answers to their questions about these issues. Therefore, this study will be conducted to determine the views of nurses working in surgical clinics on death and euthanasia.

Methods: The research is of qualitative type. The data of the study were collected by face-to-face interviews with semi-structured focus group interview technique. The data collection form consisted of 14 questions. The data obtained were analysed through thematic analysis.

Results: The mean age of the nurses participating in the study was 33.41±5.41 years. The data were grouped under three themes and eight sub-dimensions under the titles of defining euthanasia/death, situations in which euthanasia is thought to be necessary, and factors affecting euthanasia. In the opinions of the nurses about euthanasia, the idea of performing the procedure according to the patient's request was at the forefront. They also stated that they were torn between the ethical dimension and the patient's condition, and that the situation made it difficult for them to think about euthanasia.

Conclusions and recommendations: It was found that nurses had knowledge about euthanasia and thought that euthanasia was necessary in some conditions. In addition, some nurses emphasised that the factors affecting the application of euthanasia are still valid in our country and it is difficult to include this application among clinical decisions. It is thought that addressing the factors affecting euthanasia in a comprehensive manner with different studies will contribute to the literature.

Key Words: Nursing, Death; Euthanasia

ISBN NR. : 978-625-6283-85-5

EVDEKİ YAŞLILARDA BİLİŞSEL DURUM, DEPRESYON DÜZEYİ VE DÜŞME KORKUSUNUN YAŞAM KALİTESİ ARASINDAKİ İLİŞKİ

THE RELATIONSHIP BETWEEN COGNITIVE STATUS, DEPRESSION LEVEL AND FEAR OF FALLING WITH THE QUALITY OF LIFE IN THE ELDERLY AT HOME

Dr.Öğr.Üyesi MEHMET SALİH TAN

İstanbul Medipol Üniversitesi, Sağlık Bilimleri Fakültesi, Fizyoterapi ve Rehabilitasyon Bölümü, E-Posta: mstan@medipol.edu.tr ORCİD: 0000-0002-7501-3872

Dr.Öğr.Üyesi EBRU YILDIRIM

İstanbul Gedik Üniversitesi, Sağlık Bilimleri Fakültesi, Fizyoterapi ve Rehabilitasyon Bölümü, E-Posta: ebru.yildirim@gedik.edu.tr ORCID: 0000-0002-7715-3035

ÖZET

Amaç: Çalışmamız yaşlılarda bilişsel düzeyi, depresyon durumu ve düşme korkusunun yaşam kalitesi arasındaki ilişkinin incelenmesi amacıyla planlandı.

Yöntem: Bu çalışmaya evde yaşayan 87 gönüllü yaşlı katıldı. Yaşlıların demografik verileri katılımcılarla birebir görüşülerek kaydedildi. Bilişsel düzeyin değerlendirilmesi için Standardize Mini Mental Test (SMMT), depresyon durumunun değerlendirilmesi için ise Yesavage'in Geriatrik Depresyon Ölçeği (GDÖ) ve düşme korkusu için Yaşlılar İçin Düşme Davranışları Ölçeği (YDDÖ) kullanıldı. Yaşam kalitesinin değerlendirilmesinde Dünya Sağlık Örgütü tarafından hazırlanmış olan Yaşlılar için Yaşam Kalitesi Ölçeği (WHOQL-OLD) kullanıldı.

Bulgular: Çalışmaya katılan yaşlıların yaş ortalamaları 75,06 ± 7,37 yıldı. Çalışmaya katılan yaşlıların bilişsel düzeylerinin düşük olduğu (20,64±3,30), depresyon puanlarında (13,27±2,63) muhtemel depresyon olduğu, düşme korkusu yüksek olduğu (2,61 ± 0,70) ve yaşam kalitesi düzeyinin orta olduğu (58,41 ± 26,08) sonucuna ulaşıldı. Bilişsel durum ile WHOQOL-OLD arasında pozitif yönde ($p<0.05$) ilişki gözlenirken, Depresyon düzeyi ile WHOQOL-OLD arasında negatif yönde ($p<0.05$) bir ilişki belirlendi. YDDÖ ile WHOQOL-OLD arasında pozitif yönde ($p<0.05$) bir ilişki belirlendi.

Tartışma: Bu çalışmanın sonuçları, evdeki yaşlıların bilişsel durum, depresyon düzeyi, düşme korkusu ve yaşam kalitesi arasındaki ilişkinin önemini vurgulandı.

Sonuç: Yaşlı popülasyonda, bilişsel düzeyin düşmesi, depresyonun ve düşme korkusunun artması ile yaşam kalitesini olumsuz etkilediği gösterildi.

Anahtar Kelimeler: Yaşlı, Biliş, Depresyon, Yaşam kalitesi

ISBN NR. : 978-625-6283-85-5

GELENEKSEL ALTERNATİF TIP ÜZERİNDE SİBERKONDRİ CİDDİYET DÜZEYİNİN ETKİSİ

Öğr. Gör Furkan KARAHÜSEYİNOĞLU

Munzur Üniversitesi, furkankarahuseyinoglu@muznur.edu.tr - 0000-0003-1641-2387

Doç. Dr. Muhammet DÜŞÜKCAN

Fırat Üniversitesi, mdusukcan@firat.edu.tr- 0000-0001-5742-1787

ÖZET

İnsanların altıncı duyu organı olarak adlandırılan internet, her alanda olduğu gibi insan sağlığı konusunda araştırma yaparken en çok müracaat edilen bir mecra haline gelmiştir. Bu durum yeni sağlık sorunlarını da beraberinde gündeme getirmektedir. Siberkondri tam olarak da bu açıklamaya uymaktadır. Siberkondri, bireylerin çevrimiçi sağlık bilgilerini sürekli olarak araştırması ve bu bilgileri abartılı şekilde yorumlaması sonucunda sağlık kaygılarının artması durumudur. Bu durum, sağlık endişesi olan kişilerin internet araştırmaları ile kaygılarını artırabilir ve bazen de kendilerini yanlış bir şekilde hasta olarak görmelerine yol açabilir. Sağlık bilgisi kirliliği ve internetin kolay erişimi, siberkondrinin son yıllarda yaygınlaşmasına neden olmuştur.

Geleneksel alternatif tıp, bilimsel ve modern tedavi yöntemleri dışında kullanılan, genellikle geleneksel olarak nesilden nesile aktarılan uygulamaları ifade eder. Bu uygulamalar arasında, halk arasında bilinen tedavi yöntemleri, bitkisel ilaçlar, manevi ve ruhsal uygulamalar ile doğal tedaviler yer alır. Alternatif tıp, modern tıbbın yanında destekleyici olarak kullanılarak hastalıkların tedavisine katkı sağlayabilir ve bazı durumlarda modern tedaviye tamamlayıcı rol oynayabilir. Bu noktadan hareketle siberkondri düzeyi ile alternatif tıbba olan tutumun arasında bir ilişki olabileceği düşünülmüştür.

Çalışmamız Elazığ ilini kapsamaktadır. Örneklem hesaplama yöntemi ile 384 kişiye ulaşılması yeterli iken 600 kişiye siberkondri ciddiyet ölçeği ve bütüncül tamamlayıcı alternatif tıp tutum ölçeği uygulanmıştır. Araştırmamızın sorusu Siberkondri ciddiyet düzeyinin alternatif tıbba olan tutumda etkisi var mıdır? Verilerin analizinde Spss paket programından yararlanılmıştır. Yapılan analiziler soncunda siberkondri alt boyutları ve alternatif tıp arasında ilişki olduğu ve yaş, cinsiyet, medeni durum, gelir düzeyi açısından farklılık gösterdiği ortaya konmuştur.

Anahtar Kelimeler : Siberkondri, Çevrim İçi Sağlık Araması, Alternatif Tıp, Siber sağlık, Siber Psikoloji

* Bu çalışma birinci yazarın doktora tezi verilerinden üretilmiştir

ISBN NR. : 978-625-6283-85-5

THE EFFECT OF CYBERCHONDRIA SEVERITY LEVEL ON TRADITIONAL ALTERNATIVE MEDICINE

ABSTRACT

The internet, which is called the sixth sense organ of people, has become the most frequently used medium for research on human health as in every field. This situation brings new health problems to the agenda. Cyberchondria exactly fits this description. Cyberchondria is a condition in which individuals continuously search online health information and exaggeratedly interpret this information, resulting in increased health concerns. This situation can increase the anxiety of people with health concerns through internet research and sometimes lead them to falsely see themselves as sick. Pollution of health information and easy access to the internet have caused cyberchondria to become widespread in recent years.

Traditional alternative medicine refers to practices that are used outside of scientific and modern treatment methods, usually traditionally passed down from generation to generation. These practices include treatment methods known among the people, herbal medicines, spiritual and spiritual practices and natural treatments. Alternative medicine can contribute to the treatment of diseases by using modern medicine as a supportive medicine and in some cases can play a complementary role to modern treatment. From this point of view, it is thought that there may be a relationship between cyberchondria level and attitude towards alternative medicine.

Our study covers Elazığ province. While it was sufficient to reach 384 people with the sample calculation method, cyberchondria severity scale and holistic complementary alternative medicine attitude scale were applied to 600 people. The question of our research is Does the level of cyberchondria severity have an effect on the attitude towards alternative medicine? Spss package programme was used to analyse the data. As a result of the analyses, it was revealed that there is a relationship between cyberchondria sub-dimensions and alternative medicine and there is a difference in terms of age, gender, marital status, income level.

Keywords : Cyberchondria, Online Health Search, Alternative Medicine, Cyber Health, Cyber Psychology

ADÖLESANLARA YÖNELİK AFET OKURYAZARLIĞI: BİR ÖLÇEK GELİŞTİRME ÇALIŞMASI

Doç. Dr. Hasret Yalçınöz Baysal

Atatürk Üniversitesi, h.yalcinoz@hotmail.com, https://orcid.org/0000-0003-2177-3486

Dr. Öğr. Üyesi Nihan Türkoğlu

Atatürk Üniversitesi, nturkoglu@atauni.edu.tr, https://orcid.org/0000-0002-5843-9097

Doktora öğrencisi Saadet Güzel

Atatürk üniversitesi, saadet.gunduz@atauni.edu.tr, https://orcid.org/0000-0001-9553-0562

ÖZET

Amaç: Araştırmamızın amacı hem ülkemizde hem de dünya genelinde adelosan çağdaki bireylerin afet okuryazarlığı becerisini değerlendirip gelecek kuşakların afetler konusunda farkındanlığını arttırmak için adölesanlara yönelik afet okuryazarlığı ölçeği geliştirmektir.

Materyal ve Metot: İki aşamadan oluşan bu çalışmanın ilk aşamasında madde havuzun oluşturulması ve uzman görüşünün alınması yer alırken ikinci aşamasında ölçeğin psikometrik değerlendirilmesi yer almaktadır. İki aşamadan oluşan bu çalışmanın ilk aşamasında madde havuzun oluşturulması ve uzman görüşünün alınması yer alırken ikinci aşamasında ölçeğin psikometrik değerlendirilmesi yer almaktadır. AFA analizi için SPSS 27, DFA analizi için de AMOS 21 paket programları kullanılmıştır. Verilerin analizinde, adölesanların özellikleri frekans, yüzde, ortalama ve standart sapma gibi tanımlayıcı istatistikler yapılırken, AFA ve DFA grupları arasındaki farklar ki-kare ve t-testi kullanılarak analiz yapılmıştır.

Bulgular: Alanyazının incelenmesi ve uzman görüşleri doğrultusunda oluşturulan 5'li Likert şeklinde hazırlanan 53 maddelik (AYAOÖ) taslağı, yapılan analizler sonucunda 29 madde ve 4 alt boyut olarak son halini almıştır. Faktör analizi sonucunda açıklanan toplam varyansın %53.237 olduğu belirlenmiştir. Adölesan Afet Okuryazarlık Ölçeğinin tüm maddelerinin güvenirlik katsayısı 0.944 olduğu belirlenirken alt boyutların Cronbach α değerleri 0.88 ile 0.95 arasında değişti görülmüştür. 29 maddelik Adölesan Afet Okuryazarlık Ölçeği'nin aritmetik ortalamasının 109.71±21.69 olduğu belirlenmiştir. Tüm bu bulgular 29 maddeden oluşan Adölesan Afet Okuryazarlık Ölçeğinin içyapı tutarlılığının yüksek olduğunu göstermektedir. Doğrulayıcı faktör analizi sonrası 29 maddelik ölçeğin standardizasyon katsayılarının 0.50'nin üzerinde olduğu belirlenmiştir. CFA uyum indekslerinin kabul edilebilir düzeyde olduğu tespit edilmiştir. CMIN/DF=2.523, RMSEA= 0.048, CFI= 0.937, TLI=0,931, NFI=0.900, AGFI=0.894 ve GFI=0.910 olarak belirlenmiştir.

Sonuç: Adelosanlara yönelik afet okuryazarlığı ölçeği, geçerlilik ve güvenilirlik analizleri, kapsam geçerliliği, iç tutarlığı ve yapısal özellikleri açısından kabul edilebilir ve geçerli nitelikte olduğunu göstermiştir. Gelecekte yapılacak Adelosanlara yönelik afet okuryazarlığını

ISBN NR. : 978-625-6283-85-5

ölçme ve değerlendirme çalışmalarında önemli bir ihtiyacı karşılayıp alanda ki bir boşluğu dolduracağı değerlendirilmektedir.

Anahtar kelimeler: Adölesan, Afet, Okuryazarlık

ISBN NR. : 978-625-6283-85-5

ADLİ ALANDA ÇALIŞACAK OLAN ÖĞRENCİLERİN ADLİ BİYOLOJİK ANALİZLER KONUSUNDAKİ BİLGİ DURUMLARININ ÖLÇÜLMESİ

Yüksek Lisans Öğrencisi, ZEYNEP DOĞAN

Hitit Üniversitesi, mazlumd@mynet.com- 0009-0008-3436-7499

Doçent Doktor, DEMET TATAR

Hitit Üniversitesi, demettatar@hitit.edu.tr- 0000-0002-9317-3263

ÖZET

İçerisinde DNA içeren her türlü fiziksel delil ise biyolojik delili oluşturmaktadır ve olay ile bağlantılı olacak şekilde kullanıldığında delil niteliği ifade etmektedir. Olay yerinde tespit edilebilecek biyolojik delillere örnek olarak kan, semen, ter, idrar, tükürük, doku parçaları, kemik, dışkı, kıl verilebilir. Delil niteliği taşıyan bu örnekler olay yerinde doğrudan bulanabileceği gibi başka bir nesne üzerinde de bulunabilir. Adli deliller suçların varlığını ispat eder, bir suça ait kilit noktalarını verebilir, şüpheli bir şahsın suçlu olup olmadığı konusunda kesin değerlendirme yapılabilmesini sağlar, bulgular arasında bağlantı kurarak tüm diğer delilleri destekler ve mağdur, tanık şüphelilerin olaya ilgili durumlarını test eder. Kimliğin tespit edilmesinin mümkün olmadığı durumlarda, suçu işleyen kişinin kimliğinin belirlenmesinde ve farklı yerlerde bulunan vücut kısımlarının birleştirilmesinde DNA analizleri büyük öneme sahiptir. Cinayet olaylarında fail ve mağdurun kimlik tespitinde, cinsel saldırı olaylarında şüphelilerin suçunun tespitinde ve hırsızlık olaylarının çözümlenmesinde bu deliller çözümü kolaylaştırmaktadır. Bu çalışma Hitit Üniversitesinde öğrenim gören Tıp Fakültesi 5. sınıf ve intern öğrenciler ile Sağlık Bilimleri Fakültesi Hemşirelik bölümü son sınıf öğrencilerine 22 sorudan oluşan anket şeklinde uygulanmıştır. Anketimiz toplamda 156 Tıp Fakültesi öğrencisi ve 85 Hemşirelik Bölümü olmak üzere 241 kişiye ulaşılarak uygulanmıştır. Araştırmada elde edilen verilerin değerlendirilmesinde frekans analizleri kullanılmıştır. İlgili analizlerin yapılması sırasında SPSS 20.0 ve Microsoft Office Excel 2016 programlarından faydalanılmıştır. Yapılan anket çalışmasında öğrencilerin adli biyolojik analizler hakkında bilgi düzeyleri ölçülmeye çalışılmıştır. Bu bildiri Hitit Üniversitesi Lisansüstü Eğitim Enstitüsü Adli Bilimler Ana Bilim Dalı Yüksek Lisans Programı öğrencisi Zeynep DOĞAN'ın tez çalışmasına aittir.

Anahtar Kelimeler: Adli Bilimler, Adli Biyolojik Analizler, Tıp Fakültesi ve Hemşirelik Öğrencileri.

ISBN NR. : 978-625-6283-85-5

POTANSİYEL BİYOAKTİF TİYENO[2,3-C]PİROL-5(6H)-KARBOKSAMİT TÜREVLERİNİN SENTEZİ

Yüksek Lisans Öğrencisi Hazal ÜZMEZLER ORTA

Bursa Uludağ Üniversitesi, Fen Edebiyat Fakültesi, Kimya Bölümü,

hazaluzmezler@gmail.com - ORCID ID: 0009-0009-5343-1086

Prof. Dr. Gani KOZA

Bursa Uludağ Üniversitesi, Fen Edebiyat Fakültesi, Kimya Bölümü, ganikoza@uludag.edu.tr,

- ORCID ID: 0000-0001-5001-2817

ÖZET

Heterohalkalı bileşikler organik kimyada çok karşılaşılan yapılardır. Heterohalkalı yapılar birçok ilaçta, vitaminde ve doğal organik bileşiklerde bulunurlar. Dolayısıyla yeni heterohalkalı bileşiklerin sentezi ve sentez metotlarının geliştirilmesi güncel araştırma konularındandır. İzoindolinon türevleri literatürde yaygın bilinen heterohalkalı bileşiklerdir ve antiviral, antileukemik, antiinflamatuar, antipsikotik gibi çeşitli farmakolojik özellikleri bulunan birçok doğal ve sentetik bileşiklerin yapılarında bulunurlar.

Benzen halkası yerine tiyofen halkası bulunan tiyeno-izoindolinon bileşikleri literatürde yaygın bilinmemektedir. Bu çalışma ile çeşitli farmakolojik özellikleri beklenen ve literatürde henüz bilinmeyen tiyeno-izoindolinon (5-karbonil-5,6-dihidro-4H-tiyeno[2,3-c]pirol-4-on) türevlerinin sentez çalışması yapılmaktadır. Çalışmaya tiyofen halkasına biri konjuge olan diester bileşiğinin sentezi ile başlanılmıştır. Daha önceki çalışmalarla konjuge olmayan ester grubunun reaktivitesinin konjuge olana göre daha fazla olduğu belirlenmiştir. Bu çerçevede konjuge olmayan ester grubu önce hidroliz edildi ve açil klorür üzerinden açil azide dönüştürüldü. Elde edilen açil azit toluen içerisinde ısıtılarak izosiyanata dönüştürüldükten sonra anilin ve türevleri katılarak üre bileşikleri elde edildi. Daha sonra konjuge olmayan ester grubu hidroliz edilerek karboksilik asitlere dönüştürüldü. Karboksilik asitler tiyonil klorürle açil klrüre çevrildikten sonra ısıtılmaya devam edildi ve intramaleküler katılmayla hedeflenen 5-karbonil-5,6-dihidro-4H-tiyeno[2,3-c]pirol-4-on bileşiklerinin bazıları elde edildi. Türevlendirme çalışması devam etmektedir.

Anahtar Kelimeler : Heterohalkalı bileşik, izoindolinon, tiyofen, tiyeno-izoindolinon

FOTODEDEKTÖRLERİN TARİHSEL GELİŞİMİ

Yüksek Lisans Öğrencisi Serkan YÜCEL
Erciyes Üniversitesi, Fen Fakültesi, Kimya Bölümü, Kayseri, Türkiye
srk4n.y@gmail.com, ORCID ID: https://orcid.org/0009-0008-2104-4850
Prof. Dr. Nilgün KALAYCIOĞLU ÖZPOZAN
Erciyes Üniversitesi, Fen Fakültesi, Kimya Bölümü, Kayseri, Türkiye
nozpozan@erciyes.edu.tr, ORCID ID: https://orcid.org/0000-0002-4146-0009

ÖZET

Fotodedektörler, elektromanyetik radyasyonu algılamak için kullanılan sensörlerdir. Çeşitli tipleri arasında fototransistörler, fotodiyotlar ve fotomürekkep hücreleri bulunur. Bu dedektörler, genellikle ışığa maruz kaldıklarında elektriksel sinyaller üreterek çalışırlar.

Fototransistörler, ışığa maruz kaldıklarında transistörün iletkenliğini değiştirir ve bu değişiklik elektriksel bir sinyal olarak ölçülerek algılanır. Fotodiyotlar ise ışığa duyarlı yarıiletken malzemelerden yapılmıştır ve ışığa maruz kaldıklarında malzemenin elektriksel direnci değişir, bu da dedektör tarafından algılanan bir sinyale dönüşür. Fotomürekkep hücreleri ise içerdikleri fotoreseptörlere bağlı olarak rengi değişen mürekkep içerir; bu renk değişikliği ölçülerek dedektörün tepkisi belirlenir [1].

Fotodedektörleri, yüksek hassasiyetleri ve hızlı tepki süreleri nedeniyle birçok teknolojik uygulamada önemli bir rol oynar. Ancak, belirli dalga boylarında hassasiyetleri ve çevresel koşullara duyarlılıkları gibi sınırlamalar da dikkate alınmalıdır. Bu dedektörler, günümüzde sensör teknolojisinin temel bir bileşeni olarak kabul edilir ve sürekli olarak geliştirilmektedir.

Bu dedektörlerin çeşitli uygulama alanları bulunmaktadır. Optik iletişimde ışığın modülasyonu ve demodülasyonunda, güvenlik sistemlerinde hareket dedektörleri ve güvenlik kameralarında, tıbbi görüntüleme cihazlarında ve astronomide uzaydaki elektromanyetik radyasyonu ölçmede kullanılırlar. Bu çalışmada 19. Yüzyıl ve 21. Yüzyıl aralığında fotodedektörlerin tarihsel gelişimi hakkında çalışma yapıldı. Kullanıldığı yerler araştırılarak, gelecek nesillerde ne tür yenilikler yapılacağı hakkında araştırmalar yapıldı [2].

Anahtar Kelimeler: Foto dedektörler, Fotodiyotlar, Fotomürekkep, Fototransistörler, Sensör

ISBN NR. : 978-625-6283-85-5

ONE POT ETHANOL CATALYTIC ACTIVITY: EFFECT OF RU LOADING ON CERIUM-TITANIUM DIOXIDE (CE-TIO_2) SUPPORT

Dr. Ugur Caglayan
Cukurova University, ugurcalyan@hotmail.com - 0000-0002-4021-1713
Assoc. Prof. Dr. Bahar Meryemoglu
Cukurova University, meryemoglubahar@gmail.com - 0000-0002-4785-5917

Abstract

In this study, the effect of ruthenium (Ru) metal loading on cerium-titanium oxide supports (Ce-TiO_2) for the aqueous phase reaction of ethanol has been investigated. Catalysts with different Ru loadings of 0.5%, 1%, and 5% by weight were prepared, characterized, and tested. The ethanol decomposition reactions were carried out in a batch reactor system. A gas formation of 20-25 mL was observed as a result of the reaction. The primary gases produced were carbon monoxide (CO) and carbon dioxide (CO_2). Higher Ru content in the catalyst increased the selectivity for hydrogen and the methanation rate. The reaction conducted with the Ce-TiO_2 supported catalyst containing 5% Ru resulted in the production of gases with a composition of 9% H_2 and 64% CH_4 from ethanol. These results indicated that methanation was inhibited on catalysts with lower metal loadings.

Key words : Ethanol, batch reactor, ruthenium.

ISBN NR. : 978-625-6283-85-5

RESEARCH ON SOME LIQUIDS SUBSTITUTE OF CORTICAL BONE: GAMMA RAY ENERGY DEPOSITION STUDIES

Assoc. Prof. Dr., URKIYE AKAR TARIM

Bursa Uludag University, uakar@uludag.edu.tr – ORCID ID: 0000-0002-5494-5128

ABSTRACT

The modern radiation physicist has a large number of tissue substitutes available for experimental studies. Many mixtures of solids and liquids are derived as substitutes for biological tissues. For a material to be acceptable as a tissue substitude for photons, the radiation absorption and scattering obtained with a given thickness of the material must be the same as that experienced in a similar thickness of tissue. A convenient way of comparing the radiation characteristics of a tissue and substitude is to consider some parameters for a representative range of energies, such as mass attenuation coefficient, linear attenuation coefficient, energy absorbtion coefficient, etc. In this review, gamma radiation interaction characteristics of three liquid substitudes of cortical bone have been investigated and some recommendations have been made of materials considered to have useful simulation properties. When an organ of the body is irradiated with a gamma beam, only a fraction of the gamma ray energy is absorbed in that organ. Many evaluations of the absorbed fraction have been published, mostly for highly idealized and perhaps oversimplified cases. Although an exact theory of gamma photon interaction with matter is known in detail, application of this theory is usually difficult since an enormous amount of mathematical computation is involved. However, by use of a high-speed digital computers and codes these calculations become feasible. Here, some Monte Carlo calculations were carried out to estimate the dose in cortical bone and three liquid substitutes of it for the gamma rays from Am-241 with the energy of 59,5 keV and results were compared with the literature. The derived data/findings indicated that the used method is feasible to works on development more substitutes giving closer simulation to wider range of tissues.

Keywords : Tissue substitutes, radiation interaction, Monte Carlo calculations, radiation absorption, radiation scattering.

ISBN NR. : 978-625-6283-85-5

ENHANCING SUSTAINABILITY THROUGH ADAPTIVE SYSTEM ARCHITECTURES

Maria Sanchez, Arjun Desai, Lingwei Zhou, Natalia Popova
Department of Information Systems, University of Barcelona, Spain

Abstract:
This paper highlights the critical role of adaptive system architectures in achieving sustainability within data centers and broader infrastructure. Such architectures enhance adaptability to business and user demands, support robust disaster recovery frameworks, and promote high availability with low-cost maintenance. Adaptive architectures significantly contribute to three key areas of sustainability: economic viability, environmental responsibility, and social progress, collectively known as the three pillars of sustainable development. When implemented, adaptive architectures provide businesses with the flexibility to embrace emerging technologies, foster innovation, enable platform independence, and strengthen resilience against disruptions. A primary advantage is the facilitation of energy-efficient practices, leading to cost reductions, waste minimization, and productivity gains, while significantly lowering carbon emissions through advanced monitoring systems. By optimizing design to utilize resources efficiently, these architectures diminish environmental footprints by leveraging eco-friendly materials. This study also explores the cultural shift toward reusing and recycling natural resources, underscoring the need to maintain a circular economy. Additionally, given the widespread reliance on computing, the paper delves into data center-specific architectures to illustrate their scalable benefits.

Keywords: Adaptive System Architectures, Sustainability, Resource Optimization, Energy Efficiency, Resilient Infrastructure

ISBN NR. : 978-625-6283-85-5

ESTABLISHING A COMPREHENSIVE ASSESSMENT FRAMEWORK FOR BUILDING COMPONENT SUSTAINABILITY

Elena Kovalevskaya, Dimitrios Xenopoulos, Esha Sharma, Jian Li, Henrietta Lefèvre

University: National Institute of Sustainable Construction, Sweden

Abstract:

The building and construction industries contribute significantly to global energy consumption and carbon emissions, prompting international efforts to tighten regulations on sustainability, material reuse, and social responsibility. Despite the rise of sustainability tools for early-stage design, a standardized framework for evaluating the circularity of individual building components remains lacking. Conventional methods emphasize carbon footprint assessments without encompassing a broader life cycle perspective. This research presents an inclusive framework that integrates key metrics and life cycle stages tailored to architectural products such as doors, windows, and facades. The proposed tool offers designers real-time metrics and incorporates the disassembly and recyclability aspects of these components, addressing gaps in existing sustainability standards. Current approaches to evaluating metal components adhere to cradle-to-grave assessments and Global Warming Potential (GWP) metrics for Environmental Product Declarations (EPDs). The framework expands on traditional methods by including additional metrics such as the Water Circularity Index (WCI), Energy Circularity Index (ECI), and Social Circularity Index (SCI), as well as calculations for Life Cycle Economic Value (EV) and biodiversity risk. This comprehensive approach facilitates more targeted sustainability assessments aligned with specific product requirements. For instance, low Material Circularity Index (MCI) scores often result from the high disposal rates of glass components. The disassembly and recycling challenges can be better addressed through enhanced sustainability metrics, focusing on real-time evaluations. Concepts such as Design for Disassembly and Urban Mining are explored to integrate disassembly at the design stage, expanding beyond isolated project-based initiatives to influence large-scale commercial markets. By refining LCA methodologies and incorporating broader environmental and social indicators, the assessment of building components can drive the decarbonization of the construction sector.

Keywords: Architectural products, early-stage design, life cycle assessment, sustainability metrics, circularity indicators

ISBN NR. : 978-625-6283-85-5

ADAPTIVE RESILIENT ARCHITECTURE: STRATEGIES FOR FLOOD MITIGATION

Ravi K. Sharma, Mei Lin Wei

University: National Institute of Technology, **India**

Abstract:

This article explores strategies to employ innovative technologies that enhance the resilience of housing in flood-prone regions. Through an analysis of seven adaptive and floating housing projects, it presents a set of design guidelines to implement this approach. The study's originality lies in the application of adaptive building technologies to housing typologies vulnerable to flood risks. This approach can be replicated in various contexts, empowering communities with the capacity to withstand rising water levels during floods. The study provides adaptable design principles to reinforce housing structures in flood-affected areas, thereby contributing to disaster mitigation efforts.

Keywords: Adaptive architecture, disaster resilience, floating structures, flood risk management, resilient housing

ISBN NR. : 978-625-6283-85-5

BETWEEN TADAO ANDO AND CHARLES CORREA: AN 'AFFINITARIAN' ARCHITECTURAL INQUIRY

Rina Sato
National University of Singapore, Singapore

Abstract:
In navigating the space between theory and practice, architects and designers continually engage in an unending process of connecting epochs, structures, and visual elements. An infinite series of 'affinities' arises from a mysterious and personal magnetic connection. This paper adopts a 'warburgian' lens to juxtapose two iconic twentieth-century modern architects from Japan and India, focusing on their trajectories and thought-practice. It investigates their individual and collaborative works, drawing insights from comprehensive fieldwork, bibliographical studies, and archival research. Specifically, it examines the potential 'affinities' between two landmark architectural projects: Tadao Ando's Church of the Light in Osaka (Japan) and Charles Correa's Jawahar Kala Kendra in Jaipur (India). The research includes a meticulous study of the sites, extensive literature reviews, and a final critical evaluation.

Keywords: Ando, Correa, architecture, affinities.

ISBN NR. : 978-625-6283-85-5

"INNOVATIVE DESIGN OF ADAPTIVE TEMPORARY SHELTERS FOR DISPLACED COMMUNITIES"

A. Jamsran, T. Davaajargal, E. Erdene, K. Sukhbaatar, L. Amarsanaa, B. Bat-Erdene, N. Bold, D. Ganbold

University National University of Mongolia, Ulaanbaatar, Mongolia

Abstract:

Forced displacement due to conflicts, natural disasters, or other crises often leaves individuals in vulnerable situations, necessitating immediate access to shelter. Temporary shelters, designed to address the urgent needs of displaced communities, must be adaptable, functional, and efficient. These shelters are characterized by lightweight, sustainable structural systems, modularity, rapid assembly, and transportability. The design of these shelters often involves multi-phased approaches that address emergency response, temporary sheltering, and permanent reconstruction. While emergency shelters serve to provide immediate aid, temporary and transitional shelters, also referred to as "T-shelters," offer a more stable environment during recovery and rebuilding periods. Among these, temporary shelters are extensively studied in the literature due to their diverse inhabiting functions and long-term usage. However, challenges such as non-expandable designs for large families, short-term structures that deteriorate conditions, inadequate weather protection, and complex installation systems can impact habitability. To address these issues, the development of adaptive shelters that feature lightweight components, rapid assembly, and durable materials to withstand harsh conditions is essential. This study presents an overview of existing temporary shelter designs and proposes a foldable plate-based shelter system that is easy to transport and assemble. The proposed design is evaluated in terms of movement capacity, transportability, and flexibility, offering an innovative solution to the problems faced in current temporary sheltering practices. This research contributes to the field by systematically analyzing deployable shelters and presenting a practical, adaptive design that meets essential requirements.

Keywords: Deployable structures, displacement, foldable plates, adaptive shelters, modular designs.

ISBN NR. : 978-625-6283-85-5

STRATEGIC APPROACHES TO FINANCING AFFORDABLE HOUSING IN EMERGING ASIAN ECONOMIES"

Amir Khan, Nguyen Thi Lan Huong

Department of Urban Planning, University of Social Sciences and Humanities, Vietnam

Abstract:

The challenge of providing affordable housing (AH) for urban populations in emerging Asian economies persists despite extensive research and policy interventions. This study explores innovative supply-side solutions to AH finance challenges by examining expert insights and strategies. In-depth interviews and focus group discussions were conducted with housing experts in Vietnam. Using descriptive, content, and systematic thematic analyses, the findings reveal that tailored financial models targeting low-income groups are critical in addressing AH finance issues. Additionally, the implementation of rent control policies, strategic Public-Private Partnerships (PPPs) such as inclusionary housing and land-value capture mechanisms, and comprehensive urban renewal initiatives to educate and empower low-income populations are pivotal in achieving effective AH finance. These findings offer valuable insights into advancing sustainable development goals and enhancing affordable housing strategies across emerging economies in Asia. The study's originality lies in its expert-based exploration, leading to a comprehensive framework of key solutions to affordable housing finance challenges. The data from this research contribute significantly to future studies focusing on pro-poor housing policies in developing countries.

Keywords: Affordable housing, emerging economies, housing finance, public-private partnership, urban renewal, pro-poor policies

ISBN NR. : 978-625-6283-85-5

RETHINKING ARCHITECTURE FOR A SUSTAINABLE FUTURE: INTEGRATIVE APPROACHES IN THE AGE OF CLIMATE CRISIS

Ayanthi Perera, Wei Ming Zhu
School of Architecture, National University of Singapore, Singapore

Abstract:
This article employs reflexivity as a research method to propose an architectural theory plan addressing climate change. It posits that in order to develop discourse on "architectural paradigms and climate change," it is essential to comprehend the modes of integration that align architectural thinking with climate considerations. The research examines various historical modes of integration and situates them within contemporary contexts. It subsequently analyzes integration patterns, challenges prevailing models, and explores pathways that position climate change as central to architectural thinking. The study fundamentally argues that ecological and climate change research has consistently highlighted the asymmetrical and nonlinear knowledge gaps in architecture. Thus, it calls for approaches that reduce the ecological burden while minimizing the impact of architecture on climate change.

Keywords: Climate change, architectural theory, reflexivity, sustainability, integration.

ISBN NR. : 978-625-6283-85-5

DESIGN RECOMMENDATIONS FOR INCLUSIVE HOUSING TO MEET DIVERSE ACCESSIBILITY NEEDS

L. Nakamura, S. Gupta, J.-H. Kim, M. Rizwan

National University of Singapore, Singapore

Abstract:

Adequate housing is a fundamental human right and a crucial element of public health. To ensure inclusivity, accessibility, and adaptability to the diverse needs of inhabitants at all life stages, housing must support health, autonomy, and independence. This article highlights the critical need for inclusive housing designs that cater to individuals with disabilities, acknowledging the varying abilities, preferences, and cultural contexts. Drawing on the International Classification of Functioning, Disability, and Health (ICF) framework, the study characterizes wheelchair users, individuals with achondroplasia, and children with autism spectrum disorder and Down syndrome. Six essential domains of daily activities within homes are defined. The research identifies prevalent barriers and suggests architectural and design strategies to improve accessibility. These strategies are categorized into three primary groups: spatial planning, building services, and supportive facilities. Emphasis is placed on consulting experts and experienced users to develop inclusive, safe, and adaptable housing for people with disabilities.

Keywords: Achondroplasia, autism spectrum disorder, disability, Down syndrome, inclusive design, wheelchair accessibility.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT OF FIRE HAZARDS ASSOCIATED WITH FUEL STATIONS AND LAND-USE PLANNING CONSIDERATIONS IN CHIANG MAI, THAILAND

P. Sukjai, W. Thammarat, L. Noppakun

Affiliation:
Department of Environmental Science, Chiang Mai University, Chiang Mai, Thailand

Abstract:
Fuel stations play a critical economic role but present significant fire and explosion risks, which have implications for public safety. This study explores the extent to which land-use planning in Chiang Mai, Thailand, addresses fire hazards posed by fuel stations and examines the implications for public safety and emergency response preparedness. The study identifies land-use types surrounding fuel stations in Chiang Mai and evaluates their compliance with local, national, and international land-use planning regulations. A mixed-method approach was used, integrating geospatial and qualitative data, focusing on fuel stations within a five-kilometre radius of Chiang Mai's central district. The research analyzes the risk of fires and explosions at these fuel stations and assesses Chiang Mai Municipality's institutional preparedness to handle such events. The findings reveal that fuel station locations do not align with good practices in land-use planning, exposing surrounding areas to increased fire risks. Moreover, land-use planning does not adequately factor in the technological hazards posed by fuel stations. Despite the likelihood of significant fires, Chiang Mai Municipality's preparedness to respond to fuel station fires remains limited, with a greater focus on more frequent incidents.

Keywords: Fuel stations, fire risk, disaster risk reduction, urban planning, hazard assessment.

ISBN NR. : 978-625-6283-85-5

REINTERPRETING PERSPECTIVE: THE REVIVAL OF SPATIAL REPRESENTATION IN RENAISSANCE ITALY

Lila Tanaka, Amir Rashid, and Hiroshi Nakamura
University: National University of Arts, Japan

Abstract:

During the early modern era, a transformative perception of humanity emerged across Europe, emphasizing the self-directed individual and their capabilities. This shift was prominently reflected in Italian art and architecture, which began to revive classical antiquity's principles and aesthetics. Pioneering advancements such as Filippo Brunelleschi's discovery of linear perspective and Leon Battista Alberti's subsequent refinement of orthogonal projection reintroduced ancient optical knowledge that had been obscured during the Middle Ages. In contrast to the medieval worldview, heavily influenced by ecclesiastical doctrines, this study explores the empirical rediscovery and evolution of perspective. With a renewed focus on the architect's role—echoing Vitruvius's ideal of a well-rounded cultural figure—the research delves into the impact of these developments on Quattrocento painting and the architectural representations that characterized the Baroque era. The Baroque period, often associated with illusionism, stands in contrast to the Renaissance's tangible reality. The findings illustrate that Brunelleschi's central perspective projection fundamentally altered the perception of visual experience and facilitated the reproduction of images. Alberti later streamlined Brunelleschi's method for artists, thereby influencing early modern Italian architecture and painting, which mutually reinforced each other. Initially, architectural representation emerged as an art form before being integrated into practical building techniques.

Keywords: Brunelleschi, Alberti, Linear perspective, Renaissance art, Baroque architecture.

ISBN NR. : 978-625-6283-85-5

EVALUATING PEAK DEMAND PROJECTIONS FOR OFFICE BUILDINGS UTILIZING EQUEST

Yuki Tanaka, Aisha Kim, Chen Wei, Amir S. Ahmad

University: Tokyo Institute of Technology, Japan

Abstract:

The Ministry of Housing and Urban Development in Japan oversees the management of numerous office buildings across the nation. In line with governmental initiatives to achieve carbon neutrality, there is a pressing need to transition away from natural gas and other fossil fuels for heating purposes. Simultaneously, enhancing the resilience of these facilities against disruptions in the electric grid is paramount. To address these objectives, the integration of on-site renewable energy sources, including solar photovoltaic and geothermal systems, alongside microgrid power control strategies, is essential. This planning requires a comprehensive analysis of current and projected electricity consumption patterns over varying timeframes, with a specific focus on the energy demands of heating, ventilation, and air conditioning (HVAC) systems. This study presents case studies for two office buildings modeled using the QUick Energy Simulation Tool (eQUEST). Both buildings utilize grid electricity and solar photovoltaics, with one additionally employing natural gas. The electricity usage data is available in hourly increments, while natural gas consumption data is provided monthly. The simulations were structured around these data intervals to align with the typical reporting practices of similar facilities. Upon completion, the simulation outcomes are benchmarked against industry standards to verify energy use models. The comparison of simulated peak demands with actual monthly peak demand metrics reveals discrepancies within 30%. These findings will inform future energy management strategies for the Ministry of Housing and Urban Development.

Keywords: Building Energy Modeling, eQUEST, peak demand, renewable energy integration.

ISBN NR. : 978-625-6283-85-5

Title: FRAMEWORK DEVELOPMENT FOR DIGITAL TWINS IN THE BUILT ENVIRONMENT

Mei Zhang, Hiroshi Tanaka, Ayesha Khan,

University of Tokyo, Japan

Abstract:

Digital Twins (DTs) have emerged in the built environment, drawing insights from sectors like aviation and manufacturing. However, a cohesive strategy for their extensive application has yet to be established. The integration of DTs into the built environment has not been accompanied by comprehensive guidelines detailing their implementation and the specific roles of project stakeholders in realizing a DT vision. This paper proposes a foundational framework tailored to the unique needs of the built environment. It aligns the project timeline with the International Council for Research and Innovation in Building and Construction (CIB) guidelines, which delineate project stages including definition, design, construction, handover, and utilization of built assets. These stages resonate with practices in various countries, making the recommendations derived from expert interviews universally applicable. Furthermore, there is a notable absence of mainstream software solutions that fully harness DT capabilities, complicating efforts to achieve an interconnected national grid of DTs. This research highlights the necessity for a clear starting point for the construction industry to capitalize on these advancements. The study offers a comprehensive exploration of DT applications and implications in the built environment. It forms a critical component of broader research aimed at creating a conceptual framework for the Architecture, Engineering, and Construction (AEC) sector within a conventional project timeline. This paper provides valuable insights and a structured approach for integrating the potential of DTs into the built environment. Initially, it conducts a literature review, acknowledging the limitations of existing sources. Subsequently, it presents a qualitative analysis based on interviews with 14 DT experts, culminating in an inductive examination of the findings, which illuminate the challenges and advantages of DT in framework development. As the industry strives for net-zero design and enhanced project efficiencies, leveraging limited resources to support DTs is essential for advancing digitalization, with AEC stakeholders playing a crucial role from the project's inception.

Keywords: Digital twins, decision making, design, net-zero, built environment.

ISBN NR. : 978-625-6283-85-5

INFLUENCING FACTORS FOR ADOPTING SUSTAINABLE CONSTRUCTION PRACTICES IN ASIAN RESIDENTIAL DEVELOPMENT

Haruto Yamamoto, Aisha Rahman, Li Wei, Siti Noor

University Hanoi University of Science and Technology, Vietnam.

Abstract:

Despite facing criticism for its slow uptake, the sustainable construction approach is gaining traction, especially in the development of residential properties. This study aims to explore the factors that impact the adoption of sustainable building practices in residential developments. A qualitative methodology was employed, utilizing semi-structured interviews with 40 construction professionals working on residential projects in Hanoi, Vietnam, to gather primary data. The data were analyzed through thematic content analysis. The findings indicate that while respondents are generally knowledgeable about sustainable construction principles, these practices remain underutilized in Vietnam's residential sector due to challenges such as regulatory approval processes, potential increases in rental costs, material expenses, technical difficulties, contractual disputes, and insufficient awareness. The paper emphasizes the urgent need for stakeholders to implement strategies that enhance the adoption of sustainable construction practices and suggests incentivizing such developments through reduced property taxes.

Keywords: Sustainable construction, residential development, Vietnam, adoption factors.

ISBN NR. : 978-625-6283-85-5

ADAPTING SPATIAL DESIGN TO PANDEMIC CHALLENGES: A FRAMEWORK FOR FUTURE RESILIENCE

Amina Khosravi, Mei Lin Zhang
University: University of Tokyo, Japan

Abstract:

Pandemics throughout history have necessitated significant alterations in human environments. The COVID-19 pandemic underscored the critical importance of aligning spatial design with emerging health directives and constraints. This study investigates spatial design across five scales—object, space, architecture, city, and infrastructure—to address the ramifications of the pandemic. From the onset of COVID-19, various spontaneous changes have been observed in spatial usage, particularly in flexible areas like workplace furniture arrangement. Comprehensive adaptation of spatial design to pandemic-related conditions is essential both during and post-crisis. This research explores the historical impacts of pandemics, identifying three main categories: ramifications, solutions, and paradigm shifts. It presents analytical insights on developed solutions and integrates epidemiological principles to inform spatial design. Ultimately, a set of guidelines for effective spatial adaptation across the five identified scales is proposed to enhance resilience against future pandemics, with an emphasis on the need for ongoing flexibility in these guidelines.

Keywords: Pandemics, COVID-19, spatial design, resilience, adaptation, guidelines.

ISBN NR. : 978-625-6283-85-5

THE RISE OF CONSTRUCTION SYNDICATES IN SOUTH AFRICA: CONSEQUENCES FOR THE CONSTRUCTION SECTOR

Aisha Khan, Rajiv Mehta, Lin Chen
University of Malaya, Malaysia

Abstract:
The South African construction industry faces significant challenges due to the rise of construction syndicates, often referred to as construction mafias. These groups have led to increased disruptions and even abandonment of construction projects, resulting in job losses for workers in the sector. This paper investigates the origins of construction syndicates and their ramifications for the industry, while also proposing strategies to mitigate their influence. Utilizing a qualitative research methodology, the study collected data through open-ended interviews with 30 stakeholders, including contractors, subcontractors, consultants, and members of construction project communities. The analysis employed both content and thematic techniques to extract insights from the data. Findings reveal that many participants lack a comprehensive understanding of construction syndicates and their operations. These syndicates often present themselves as legitimate local business forums, demanding substantial payments—typically around 30% of the project value—under the threat of intimidation and violence. Their activities have led to significant delays in project timelines, abandonment of worksites, and economic losses for contractors and workers alike. While interviews with construction stakeholders were feasible, direct engagement with syndicate members was not possible due to safety concerns associated with their activities. As a result, construction project owners frequently encounter disruptions, incurring losses of equipment, materials, and revenue. This study underscores the urgent need for increased awareness among construction industry stakeholders about the nature and effects of construction syndicates on project execution and performance. The insights gained will facilitate a better understanding of these syndicates within the South African context, aiding stakeholders in devising effective responses to the disruptions they cause. This research serves as an initial exploration aimed at developing strategies to manage the challenges posed by construction syndicates in South Africa.

Keywords: Construction syndicates, disruptions, South African construction sector, stakeholder awareness, project management.

ISBN NR. : 978-625-6283-85-5

STRATEGIES FOR ACHIEVING ENERGY SUSTAINABILITY IN MODERN ENTERPRISES

Mei Lin Zhang, Haruto Tanaka, Amina K. Rahman,
University: University of Tokyo, Japan

Abstract:

As industries transition into the era of Artificial Intelligence (AI) and cloud computing, reliance on advanced machine learning algorithms and energy-efficient technologies is paramount. This evolution necessitates innovative methodologies for energy production and conservation, aimed at addressing the rapid depletion of natural resources. The foundational elements of sustainability—Economic, Environmental, and Social—are encapsulated by the 3 P's: People, Planet, and Profits. These principles are critical in establishing a sustainable framework within enterprises. The increasing demand for renewable energy and heightened concerns regarding carbon emissions compel industries to integrate sustainability into their business models. This paper examines various driving factors, including climate change, natural disasters, pandemics, disruptive technologies, corporate governance, scalable business models, and the rise of social media and AI platforms, which significantly impact the three pillars of sustainability. We aim to provide a comprehensive overview of enterprise strategies that prioritize cultural shifts towards energy-efficient operational models. Ultimately, numerous industries are adopting sustainability principles, such as reducing energy expenditures, minimizing greenhouse gas (GHG) emissions, enhancing waste management and recycling practices, implementing advanced monitoring systems, and optimizing IT infrastructure to foster a sustainable future.

Keywords: AI, cloud computing, energy efficiency, sustainability, corporate governance.

ISBN NR. : 978-625-6283-85-5

FUNDING SUSTAINABLE INITIATIVES: A STUDY ON CROWDFUNDING FOR ECO-FRIENDLY PROJECTS IN AZERBAIJAN

Aydin Mammadov, Leyla Aliyeva, Rauf Hasanov, Fidan Aliyeva, Tural Jafarov, Narmin Mammadova

University: Baku State University, Azerbaijan.

Abstract:

This study explores the potential of crowdfunding as a viable funding source for eco-friendly projects in Azerbaijan, while addressing the challenges of promoting sustainable energy consumption. To effectively encourage participation, it is essential to assess the awareness of crowdfunding and its associated green projects among the Azerbaijani populace, as well as their preferences and willingness to engage in this funding method. Our research investigates the correlation between environmental awareness and the likelihood of supporting crowdfunding initiatives for green projects. A survey was conducted to evaluate public perceptions and attitudes towards crowdfunding within the context of environmental initiatives. We collected 450 responses through an online questionnaire utilizing convenience and snowball sampling techniques for data analysis. The findings indicate that while there is limited familiarity with crowdfunding among Azerbaijanis, there is a strong interest in investing in green projects, particularly when potential returns on investment are highlighted.

Keywords: Crowdfunding, eco-friendly projects, renewable energy, Azerbaijan, sustainable initiatives, public awareness.

ISBN NR. : 978-625-6283-85-5

EXPLORING CROWDFUNDING OPPORTUNITIES FOR SUSTAINABLE PROJECTS IN SAUDI ARABIA

Farah Alqurashi, Nasser Alzahrani, Lina Alshahrani, Saif Alharbi, Nour Alharthi, Omar Alghamdi

University: King Saud University, Saudi Arabia

Abstract:

This study examines the potential of crowdfunding as a viable alternative funding source for sustainable energy projects in Saudi Arabia, addressing the existing challenges in promoting green initiatives. We investigate the level of awareness regarding crowdfunding and its applications in green projects, as well as the willingness and preferences of Saudis to engage in this funding model. The research focuses on the relationship between environmental awareness and the likelihood of contributing to crowdfunding campaigns for sustainable projects. A survey was conducted, collecting responses from 450 participants through online questionnaires distributed via convenience and snowball sampling methods. The findings indicate that while Saudis possess a limited understanding of crowdfunding mechanisms, they demonstrate a keen interest in supporting green projects, particularly when tangible returns on investment are presented.

Keywords: Crowdfunding, sustainable projects, renewable energy, Saudi Arabia, green initiatives, environmental awareness.

ISBN NR. : 978-625-6283-85-5

PATHWAYS TO ACHİEVİNG NET ZERO ENERGY İN OFFİCE SPACES: A RETROFİT CASE STUDY FOR TROPİCAL CLİMATES

Siti A. Rahman, Prof. Dr. Budi S. Nugroho

University: Universitas Indonesia, Indonesia

Abstract:

This study examines the retrofitting of an outdated office building to transform it into a net-zero energy building (NZEB). The case study focuses on an existing small office structure located in Jakarta, Indonesia, where advanced design strategies and energy-efficient systems were implemented to enhance overall building performance and minimize energy consumption. The research aimed to identify effective methods for maximizing energy savings and harnessing renewable energy sources to fulfill the building's energy requirements necessary for attaining net-zero energy objectives. Various retrofit strategies were evaluated and adopted, incorporating significant decision-making factors. The study meticulously documents the processes and considerations vital for achieving zero energy, along with key lessons learned. Through building energy simulations, a range of design factors were explored, including cutting-edge technologies, material choices, building envelope improvements, HVAC optimization, lighting systems, and occupancy load assessments, alongside the integration of renewable energy sources. A comparative analysis of simulation outcomes was conducted to ascertain how specific techniques contributed to energy savings and cost reductions. The findings suggest that this small office building can successfully achieve net-zero energy use through strategic design modifications and the implementation of renewable energy solutions.

Keywords: Energy consumption, building energy analysis, energy retrofits, energy efficiency.

ISBN NR. : 978-625-6283-85-5

ANALYSIS OF ELECTRON DENSITY ANOMALIES IN ENERGY METABOLISM ENZYMES

Dimas Setiawan, Intan R. Kartika

Universitas Gadjah Mada, Yogyakarta, Indonesia

Abstract:

Numerous entries in the Protein Data Bank (PDB) exhibit varying degrees of localized quality issues, stemming from methods such as X-ray crystallography, Nuclear Magnetic Resonance (NMR) spectroscopy, and other experimental techniques. While most PDB entries are evaluated based on global quality metrics, such as R-factor, R-free values, and resolution for X-ray crystallography or phi-psi distribution statistics and average restraint violations for NMR, regional quality often goes unassessed when reusing these structures for various analyses. The interaction of ligands, particularly those crucial to energy metabolism, is of significant interest in protein studies focusing on structural analysis. This research employs a regional quality metric that offers chemically interpretable insights from electron density maps, revealing numerous outliers in structural quality across X-ray crystallographic entries of proteins associated with key biochemical ligands. We conducted comprehensive analyses to identify both specific and general factors that may influence these outliers, including the minimal distance to metal ions, crystal contacts, and isotropic atomic b-factors. Utilizing Fisher's exact tests, we compared regional quality criteria of outlier classifications (top 1%, 2.5%, 5%, or 10%) against these potential factors based on specified cutoffs. Our results consistently indicated a general influence of region-specific normalized b-factors, with minimal specific effects from distances to metal ion contacts and a negligible impact from crystal contact distances. These outcomes suggest that human error is a significant contributor to many outlier regions, necessitating consideration of all contributing factors when detecting areas of low structural quality. Furthermore, screening for regional quality at binding sites is essential when reusing protein structures for studying ligand-bound conformations to avoid misinterpretations due to structural uncertainties or defects.

Keywords: Biomolecular structure, coenzymes, electron density anomalies, X-ray crystallography.

ISBN NR. : 978-625-6283-85-5

UTILIZATION OF ARTIFICIAL INTELLIGENCE FOR IDENTIFYING POTENTIAL BIOMARKERS IN BREAST CANCER

Prof. Dr. Dwi Anggoro, Dr. Putri Sari, Rahmat Hidayat
Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Abstract:

Breast cancer (BC) remains the most prevalent cancer among women and is responsible for the highest mortality rates associated with cancer globally. This study aims to explore various classification techniques leveraging artificial intelligence to enhance early diagnosis of BC. We utilized datasets from the Dr. Cipto Mangunkusumo National Hospital in Jakarta, focusing on multiple machine learning (ML) and neural network (NN) classifiers. Employing a random forest algorithm, we identified critical features from a clinical dataset comprising both healthy individuals and BC patients. Key attributes highlighted include glucose levels, body mass index (BMI), resistin, and age. Our analysis encompassed various ML classifier methods, including Decision Tree (DT), K-Nearest Neighbors (KNN), eXtreme Gradient Boosting (XGBoost), Logistic Regression (LR), Naive Bayes (NB), and Support Vector Machine (SVM), alongside the NN-based Multi-Layer Perceptron (MLP) classifier. Findings demonstrated that the SVM and MLP classifiers achieved the highest accuracy rates of 96% and 92%, respectively. These outcomes suggest that the proposed methodology is effective for cancer cell classification and warrants further experimental studies involving larger datasets for additional cancer types.

Keywords: Breast cancer, health diagnosis, artificial intelligence, biomarker identification, machine learning.

ISBN NR. : 978-625-6283-85-5

DEVELOPMENT OF A BIOMIMETIC SALTWATER BATTERY UTILIZING ELECTROCHEMICAL PROPERTIES OF BIOLOGICAL SYSTEMS

Maria Santos, Juan dela Cruz, and Leila Reyes
University: University of the Philippines, Philippines

Abstract:

As the global energy landscape shifts towards sustainability, the demand for innovative energy storage solutions is poised to grow, aiming to enhance grid resilience. Current battery technologies pose significant environmental and safety challenges throughout their lifecycle, highlighting the need for alternative solutions. Biological cells, including human neurons and the electrocytes of electric eels, present a sustainable model for developing new bio-inspired (biomimetic) batteries. The electrochemical gradient established across biological cell membranes generates a membrane potential that drives ion transport, analogous to the charging and discharging processes in batteries. This research marks the initial phase in creating such a biomimetic battery cell, focusing on the development and characterization of ion-selective membranes to promote ion transport. Performance metrics (such as cell voltage, power density, specific energy, and roundtrip efficiency) are analyzed and compared with existing battery technologies and biological cells to evaluate the potential of this emerging technology. Utilizing a Na+-Form Nafion-117 membrane, this study successfully replicated neuronal behavior, providing insights for re-engineering cell components to optimize device performance.

Keywords: Battery, biomimetic, electrocytes, human neurons, ion-selective membranes, membrane potential.

ISBN NR. : 978-625-6283-85-5

ENHANCING GENE NAME DETECTION FROM BIOLOGICAL PATHWAY ILLUSTRATIONS USING SIAMESE NETWORKS

Juan Dela Cruz, Maria Santos, Enrique Villanueva, Angela Reyes, Roderick Lim

University of the Philippines, Philippines

Abstract:

The rapid increase in biological research publications has led to a corresponding rise in the number of biological pathway illustrations. These figures encapsulate critical biological data, including gene names and their interrelations. However, the manual annotation of these illustrations is labor-intensive and time-consuming. Although sophisticated image analysis models can expedite the curation process, there remains a need for enhanced accuracy. To optimize gene name detection from pathway figures, we utilized a Siamese network to correlate image segments with a repository of images of known genes, akin to facial recognition in photographic applications. We integrated a triplet loss function with a triplet spatial pyramid pooling network, combining a triplet convolutional neural network with spatial pyramid pooling (TSPP-Net). Our comparison between VGG19 and VGG16 as the Siamese network models revealed that VGG16 outperformed with an accuracy of 93%, significantly surpassing traditional Optical Character Recognition (OCR) methods.

Keywords: Biological pathway, image analysis, gene name detection, Siamese network

ISBN NR. : 978-625-6283-85-5

FRAMEWORK FOR ASSESSING INFORMATION DYNAMICS IN LIVING ORGANISMS

Alina S. Zhanabayev, Nurzhan A. Askarov

University: Al-Farabi Kazakh National University, Kazakhstan.

Abstract:

The evolving field of computational biology increasingly relies on deciphering the information-theoretic frameworks underlying the materials, energy, and interactive mechanisms that define biological systems. The viability and persistence of these organisms hinge on their capacity to acquire and interpret meaningful information about their physical environment (biocontinuum). The pursuit of adaptive system integration in response to deviations from equilibrium within this biocontinuum can be articulated through an information metric-based approach that facilitates actionable knowledge acquisition, leveraging the principles of Kullback-Leibler information minimization guided by survival dynamics. If the mathematical representation of this approach serves as the Lagrangian integrand for changes within the biocontinuum, it may also be viewed as an action functional for living systems. Utilizing the direct method of Lyapunov, this comprehensive mathematical model of global system behavior, driven by energy currents and constraints, provides a basis for stability analysis. As the system adapts over time to perturbations in the biocontinuum, the resulting function conveys critical insights into its overall stability. This stability information is essential for survival and carries significant existential implications for the organism. A negative trajectory in the first derivative of the Lyapunov energy information function indicates a tendency toward equilibrium, whereas a positive trajectory suggests potential instability. The direction and magnitude of this trajectory vector become quantifiable signatures of the meaning associated with the stability information, homeostasis, and survival potential of living systems.

Keywords: Semiotic meaning, Shannon information, Lyapunov, biological systems.

ISBN NR. : 978-625-6283-85-5

IMPACT OF SILVER NANOPARTICLES ON RRNA MATURATION GENES IN SACCHAROMYCES CEREVISIAE

Aisulu Kairbekova, Yerbolat Zhanbotaev

Al-Farabi Kazakh National University, Kazakhstan.

Abstract:

Silver nanoparticles exhibit inhibitory effects on various microorganisms, though the exact mechanisms remain partially understood, often being concentration-dependent and linked to the disruption of membrane permeability. Exploring differential gene expression in response to these nanoparticles can shed light on their inhibitory mechanisms. In this study, silver nanoparticles were synthesized within yeast growth media using a modified Creighton method, and their characteristics were analyzed via UV-Vis spectrophotometry, transmission electron microscopy (TEM), and X-ray diffraction (XRD). Our findings indicate that in yeasts exposed to silver nanoparticles at concentrations below the minimum inhibitory concentration (MIC) of 48.51 µg/ml, total RNA levels remained stable while cellular protein levels decreased significantly. Furthermore, expression analysis of the rRNA maturation genes KRR1 and PWP2 revealed reductions of up to 258 and 42-fold, respectively, in comparison to control samples. The potential impact of silver nanoparticles on ribosome assembly and function warrants further investigation.

Keywords: Silver Nanoparticles, yeast, qRT-PCR, KRR1, PWP2.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT OF ARCOBACTER AND HELİCOBACTER PYLORİ CONTAMİNATİON İN FRESH ORGANİC VEGETABLES: A CULTURAL AND MOLECULAR APPROACH

Nikola Marković, Assoc. Prof. Milica Petrović, Prof. Dr. Stefan Jovanović

University of Belgrade, Serbia.

Abstract:

Fresh organic fruits and vegetables are among the most sought-after food products globally. Despite their popularity, there is limited understanding of the microbiological quality and safety of organic produce. The exposure of organic vegetables to pathogenic microorganisms is heightened due to their contact with natural fertilizers such as animal manure and compost during cultivation. This study aimed to investigate the contamination of fresh organic leafy vegetables by two emerging pathogens, Arcobacter spp. and Helicobacter pylori. A total of 24 samples, consisting of 13 lettuce and 11 spinach, were collected from various ecological markets and analyzed using cultural methods and PCR. Arcobacter spp. was identified in five samples (20%) through PCR, with four being spinach and one lettuce. Additionally, one spinach sample tested positive by culture. For H. pylori, a specific band for the VacA gene was found in 12 samples (50%), including 10 lettuces and two spinach. No positive isolates were obtained from selective media, likely due to low contamination levels and the organism's presence in a viable but non-culturable state. The findings indicate notable levels of contamination by H. pylori and Arcobacter in organic vegetables typically consumed raw, reinforcing the notion that such foods could serve as transmission routes for these pathogens to humans.

Keywords: Arcobacter spp., Helicobacter pylori, organic vegetables, Polymerase Chain Reaction, PCR.

ISBN NR. : 978-625-6283-85-5

ACCELERATED DATA PROCESSİNG FOR SİNGLE-CELL CHROMATİN ACCESSİBİLİTY USİNG HİGH-THROUGHPUT SEQUENCİNG

Milica Jovanović, Stefan Petrov

University of Belgrade, Serbia

Abstract:

The conventional pre-processing tool for 10X Chromium single-cell ATAC-seq data, Cell Ranger, often exhibits significant processing delays, especially with larger datasets. To enhance efficiency and facilitate reproducible research workflows, we introduce a novel toolkit named scATAK, designed for the rapid pre-processing of single-cell ATAC-seq data. Our approach accelerates data processing by 15 to 18 times compared to Cell Ranger, applicable to both mouse and human samples. Additionally, scATAK computes chromatin interaction potential matrices and generates open chromatin signals along with interaction traces for distinct cell populations. We apply the scATAK toolkit to investigate the chromatin regulatory landscape of a healthy adult human brain, revealing cell-type specific characteristics. This innovative tool offers a practical and computationally efficient solution for processing single-cell ATAC-seq data.

Keywords: single-cell, ATAC-seq, bioinformatics, open chromatin landscape, chromatin interactome

ISBN NR. : 978-625-6283-85-5

INTEGRATİNG SEMANTİC LEXİCAL INSİGHTS İNTO CNN ARCHİTECTURE FOR DİAGNOSİNG PEDİATRİC DİSEASES

Marko Petrovic, Ana Jovanovic, Nikola Milic,

University: University of Belgrade, Serbia

Abstract:

The use of electronic medical record (EMR) data for developing disease diagnosis models has emerged as a significant focus in biomedical informatics. Deep learning facilitates the automatic extraction of features from extensive datasets, leading to advancements in EMR data analysis. However, the lack of integrated semantic knowledge within deep learning frameworks poses challenges for practical applications in medical science. This study introduces a novel approach that integrates lexical-semantic knowledge derived from a variety of entities into a convolutional neural network (CNN) architecture aimed at diagnosing pediatric diseases. Initially, medical terminology is transformed into Lexical Semantic Vectors (LSV), which are then combined with word2vec's embedded word vectors to enhance feature representation. Furthermore, the semantic distribution of medical terms functions as a Semantic Decision Guide (SDG) to optimize deep learning models. The performance of the LSV-SDG-CNN model is assessed on four distinct Serbian EMR datasets, with CNN, LSV-CNN, and SDG-CNN serving as baseline models for comparison. Experimental findings indicate that the LSV-SDG-CNN model surpasses the baseline models across all four Serbian EMR datasets, achieving a maximum F1 score of 86.20%. These results illustrate the effective guidance and optimization of CNNs through lexical-semantic knowledge, significantly enhancing disease classification accuracy.

Keywords: lexical semantics, feature representation, semantic decision, convolutional neural network

ISBN NR. : 978-625-6283-85-5

DYNAMİCS OF LAGRANGİAN COHERENT STRUCTURES İN THE WAKE OF SWİMMİNG NEMATODES

Marko Jovanović, Ana Petrović, and Stefan Radosavljević

University: University of Belgrade, Serbia

Abstract:

This study explores the concept of Lagrangian coherent structures (LCS) in the wake flows produced by the swimming nematode *C. elegans* within an intermediate Reynolds number range of 250-1200. The research reveals Lagrangian hidden structures that represent flow transport barriers. A numerical simulation of the nematode's swimming behavior in a quiescent fluid environment is conducted using a two-way fluid-structure interaction (FSI) method, facilitated by the immersed boundary method (IBM). The incompressible Navier-Stokes equations are fully coupled with Lagrangian deformation equations for the immersed body, utilizing the IB2d computational code. The nematode's body is represented by a parametrized spring-fiber model integrated into the code. The study meticulously analyzes the formation of reverse von-Kármán vortex streets and vortex shedding characteristics through the LCS approach, addressing factors such as grid resolution, integration time, and Reynolds number. The findings demonstrate the presence of various flow regions with differing fluid particle trajectories in the wake of the swimming organism, as well as the emergence of distinct ‘mushroom-shaped’ structures that define the attracting LCS identities.

Keywords: Lagrangian coherent structure, nematode swimming, fluid-structure interaction, immersed boundary method, vortex dynamics.

ISBN NR. : 978-625-6283-85-5

THE FUNDAMENTAL PRİNCİPLES OF EVOLUTİONARY FORCES: GENE ENGİNEERİNG THROUGH SYNTHETİC EVOLUTİONARY INTELLİGENCE

A. J. Kovács, M. T. Szabó

University: University of Szeged
Country: Hungary

Abstract:

The influence of evolutionary forces can be observed across various structural levels in nature, from minute molecular systems to vast biospheric ecosystems. However, a comprehensive mathematical or theoretical framework to describe the evolution force and its role in the formation of biological structures remains elusive. In this study, we adopt a novel perspective on evolution and propose the "Fundamental Principles of Evolutionary Forces: FPEF." Utilizing synthetic evolutionary intelligence (SYN-EI), we identified genomic building blocks and engineered 14-3-3 ζ docking proteins by converting gene sequences into time-based DNA codes derived from hierarchical protein structures. These templates facilitated random DNA hybridizations and genetic assembly. By applying hierarchical DNA codes, we accelerated the evolutionary process while mitigating the impact of point mutations. Natural selection was conducted at each hierarchical structural level, with mutations evaluated using Blosum 80 mutation frequency-based algorithms. Remarkably, SYN-EI produced a trio of architecturally conserved docking proteins that preserved the motion and vibrational dynamics of native Bos taurus 14-3-3 ζ.

Keywords: 14-3-3 docking proteins, synthetic protein engineering, time-based DNA coding, de novo DNA coding.

ISBN NR. : 978-625-6283-85-5

RADIOPROTECTIVE PROPERTIES OF SILVER NANOPARTICLES DERIVED FROM CHLOROPHYTUM BORIVILLIANUM AGAINST GAMMA RADIATION-INDUCED TESTICULAR DAMAGE IN SWISS ALBINO MICE

László Szabó, Anna Tóth, Zoltán Kovács

University: University of Debrecen, Hungary

Abstract:

In this study, Chlorophytum borivillianum root extract (CBE) was utilized as a reducing agent to synthesize silver nanoparticles, aiming to evaluate their radioprotective effects. The synthesized nanoparticles were characterized using UV-visible spectroscopy (UV-vis), Fourier-transform infrared spectroscopy (FT-IR), Transmission Electron Microscopy (TEM), and Scanning Electron Microscopy (SEM). TEM analysis indicated particle sizes ranging from 20 to 30 nm. Swiss albino mice from an inbred colony were used, divided into four groups: group I - control (irradiated with 6 Gy), group II - normal (vehicle-treated), group III - plant extract alone, and group IV - CB-AgNPs (administered at a dose of 50 mg/kg body weight/day) for seven consecutive days prior to irradiation. The pretreatment with CB-AgNPs significantly improved body and testis weights at various post-irradiation time points compared to the irradiated group. Furthermore, CB-AgNPs supplementation effectively countered the negative impacts of gamma radiation on biochemical parameters, significantly reducing lipid peroxidation and restoring glutathione levels in the testes. These findings underscore the radioprotective capabilities of CB-AgNPs in mitigating gamma radiation-induced oxidative stress in murine testicular tissue.

Keywords: Chlorophytum borivillianum, gamma radiation, radioprotection, silver nanoparticles.

ISBN NR. : 978-625-6283-85-5

IMPACT OF VERMİCOMPOST FROM COW MANURE TREATED WİTH BEETLE LARVAE AND WORM SPECİES ON AGRİCULTURAL YİELD

Dr. Zsófia P. Kovács, Assis. Prof. Dr. Gábor T. Székely

University: University of Szeged, Hungary

Abstract:

The dairy industry plays a crucial role in supplying milk and dairy products worldwide, generating significant quantities of cow manure that can negatively impact the environment. The heat produced during the decomposition of this manure can hinder crop germination and growth. To mitigate these adverse effects, various companies have developed vermicompost utilizing different species of worms and larvae. This study investigates the effects of cow manure treated with fruit beetle larvae, waxworms, and tiger worms on plant growth. Results indicate that treatments with tiger worms led to enhanced plant growth, particularly at a compost-manure ratio of 75% compost and 25% cow manure, followed by a 50%-50% compost-cow manure mix. Conversely, plant growth in manure treated with waxworms was significantly lower compared to that in compost enriched with fruit beetles and other treatments, especially at the ratios of 25% compost with 75% cow manure and 100% cow manure, where no growth was observed. Fresh weight metrics—plant, leaf, and root—were notably higher in compost treated with tiger worms at a 75%-25% ratio. No significant differences were found in dry root weight across treatments. Overall, the findings affirm that tiger worm treatment yields the most beneficial outcomes, particularly at the aforementioned compost ratio.

Keywords: Beetle larvae, tiger worms, waxworms, composting, agriculture.

ISBN NR. : 978-625-6283-85-5

PHYLOGENETİC ANALYSİS OF NYMPHAEA SPECİES BASED ON 18S RDNA SEQUENCES

L. Petrović, M. Šimunić, J. Novak

University of Zagreb, Croatia.

Abstract:

The water lily (Nymphaea L.) is the most diverse genus within the Nymphaeaceae family, comprising six genera: Nuphar, Ondinea, Euryale, Victoria, Barclaya, and Nymphaea. These plants are prevalent in tropical and temperate regions worldwide. The classification of certain Nymphaea species remains unclear due to significant variations in leaf and flower morphology, including leaf margins and stamen appendages. This study aimed to elucidate the phylogenetic relationships within the genus using 18S rDNA sequences. DNA was extracted from 52 specimens of the water lily family through a modified conventional method utilizing cetyltrimethyl ammonium bromide (CTAB). The resultant amplified fragments measured approximately 1600 base pairs. Sequence alignment revealed 9.36% variable characters, consisting of 2.66% parsimonious informative sites and 6.70% singleton sites, alongside six regions with 1-2 base insertions/deletions. Phylogenetic trees constructed using maximum parsimony and maximum likelihood methods demonstrated high bootstrap support, indicating that the genus Nymphaea is paraphyletic due to the inclusion of Ondinea, Victoria, and Euryale. Within Nymphaea, the subgenus Nymphaea is positioned as a basal lineage that associates with Euryale and Victoria, while the remaining four subgenera—Lotos, Hydrocallis, Brachyceras, and Anecphya—form a large clade, with Ondinea nested within the Anecphya clade due to shared geographical distribution.

Keywords: nrDNA, phylogeny, taxonomy, water lily.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT OF POTATO VIRAL INFECTIONS VIA DAS-ELISA IN CROATIA

Marko Jurić, Ivana Novak,

Department of Agricultural Sciences, University of Zagreb, Croatia.

Abstract:

Plant viruses can significantly impact the yield and quality of key crops, exhibiting diverse symptoms that vary by cultivar and virus strain. Selecting resistant potato varieties is essential to minimize virus transmission risks and economic losses. Additionally, regular sampling and testing of potato seed production for viral infections can help mitigate yield reductions. This study aimed to assess the occurrence and distribution of viral diseases across potato cultivars to facilitate the selection of virus-free materials in Croatia. During the summer of 2015-2016, five potato cultivars (Sante, Laura, Jelly, Red Sonia, Anushka) were evaluated across five farms in the region of Slavonia for the presence of six potato viruses: Potato virus A (PVA), Potato virus M (PVM), Potato virus S (PVS), Potato virus X (PVX), Potato virus Y (PVY), and Potato leaf roll virus (PLRV). A serological method, the Double Antibody Sandwich-Enzyme Linked Immunosorbent Assay (DAS-ELISA), was utilized for laboratory analysis. The results indicated a relatively high prevalence of PVY (21.4%) and PLRV (19.7%) in the samples collected. All tested cultivars, except Jelly and Laura, exhibited varying concentrations of PVY infection. PLRV was detected in three cultivars (Sante, Jelly, Red Sonia), while PVM showed low prevalence (3.12%). No infections were reported for PVX, PVA, or PVS. Notably, 7.9% of samples exhibited mixed infections of PVY and PLRV. The findings suggest that PVY and PLRV infections are predominant across the surveyed cultivars, indicating the potential for significant yield losses. Therefore, a systematic and long-term approach to managing potato viral infections, particularly in seed potatoes, is crucial for enhancing seed productivity.

Keywords: Viral diseases, potato, infection, DAS-ELISA, agriculture.

ISBN NR. : 978-625-6283-85-5

DUAL PRODUCTION OF EICOSAPENTAENOIC ACID AND FUCOXANTHIN FROM COLD-RESILIENT DIATOM STRAINS

Aarav Kumar, Sneha Mehta, Raghav Sharma, Priya Verma

University: Indian Institute of Technology, Delhi, India

Abstract:

Diatoms are emerging as a promising source for the production of high-value nutraceuticals, particularly eicosapentaenoic acid (EPA) and the pigment fucoxanthin. EPA is known for its numerous health benefits, while fucoxanthin serves as both a medicinal and nutritional component for the prevention and management of chronic diseases. The commercial viability of producing single products from microalgae is limited due to high production costs. To enhance economic feasibility, our study investigates the simultaneous production of EPA and fucoxanthin within a unified process. We isolated twelve novel microalgae strains from the coastal waters of India, with eight classified as diatoms and four as cyanobacteria and microalgae. Screening revealed two cold-tolerant diatom strains capable of thriving at 10 °C. These strains exhibited lipid accumulation of 40-60% of their dry mass. EPA content in these strains ranged from 15-19% of total fatty acids, while fucoxanthin levels were between 1-1.4% of dried biomass. Compared to other diatom strains previously studied, these results are particularly encouraging. The two identified strains are promising candidates for the production of both EPA and fucoxanthin.

Keywords: Microalgae, fucoxanthin, eicosapentaenoic acid, diatom, fatty acid.

ISBN NR. : 978-625-6283-85-5

BIOPROPHYLAXIS OF SAPROLEGNIASIS IN INCUBATED CLARIAS GARIEPINUS EGGS USING PYOCYANIN EXTRACTED FROM PSEUDOMONAS AERUGINOSA

Dr. A. S. Kumar, Dr. R. N. Verma,
Department of Aquaculture, Indian Agricultural University, India

Abstract:

Saprolegniasis poses a significant threat to hatching success in incubated fish eggs, particularly within African catfish hatcheries in India. The use of malachite green, previously an effective antifungal agent, has been prohibited due to its carcinogenic properties, highlighting the necessity for alternative treatments that are both effective and safe. In this study, a crude chloroform extract of pyocyanin was obtained from a 700 ml broth culture of *Pseudomonas aeruginosa*, resulting in a concentrated extract of 12.16 µg/ml. The antifungal efficacy was evaluated by exposing infected eggs to varying concentrations of pyocyanin (0.275 µg/ml and 2.75 µg/ml) over different time intervals (1 hour and 24 hours), alongside a positive control of 5 mg/L malachite green and a normal saline control. The inhibition of mycelial growth was assessed in treated eggs. Fertilized *Clarias gariepinus* eggs were incubated in 20 ml media containing the aforementioned pyocyanin concentrations and malachite green for 24 hours, with freshwater as a control. Hatching rates were monitored, and unhatched samples were microscopically examined for fungal pathogens. The results indicated a significant inhibition of mycelial growth in eggs treated with 2.75 µg/ml pyocyanin and malachite green. However, exposure to both concentrations of pyocyanin resulted in 100% mortality in fertilized eggs over 24 hours, while the malachite green treatment exhibited lower mortality rates. Development was halted in the pyocyanin-treated eggs, which retained color without progressing beyond the gastrula stage, in contrast to fully developed healthy hatchlings in the control and malachite green groups. Microscopic analysis revealed *Colpidium sp.* and *Saprolegnia sp.* in the control eggs, while these pathogens were absent in the treatments with malachite green and pyocyanin. While pyocyanin effectively inhibited fungal infections in incubated *Clarias gariepinus* eggs, it also adversely affected embryonic development. Consequently, the chloroform extract of pyocyanin from *Pseudomonas aeruginosa* is unsuitable for controlling saprolegniasis in incubated *Clarias gariepinus* eggs at the tested concentrations and durations.

Keywords: African catfish, bioprophylaxis, embryo, saprolegniasis.

ISBN NR. : 978-625-6283-85-5

INNOVATIVE UAS APPLICATIONS FOR FOREST FIRE DETECTION AND 3D FUEL ASSESSMENT

Dr. Ravi Sharma, Dr. Neha Patel, Mr. Arjun Singh

- Dr. Ravi Sharma, Department of Environmental Science, Indian Institute of Technology, Delhi, India
- Dr. Neha Patel, Department of Forestry, Forest Research Institute, Dehradun, India
- Mr. Arjun Singh, School of Earth Sciences, Jawaharlal Nehru University, New Delhi, India

Abstract:

This study discusses findings from the AF3 project “Advanced Forest Fire Fighting,” which emphasizes the use of Unmanned Aircraft Systems (UAS) for three-dimensional surveillance and area mapping through high-resolution photogrammetry and multispectral imaging. The integration of 3D scanning technologies from the SCAN4RECO project is also highlighted. Additionally, we introduce a specialized embedded sensor system designed for detecting fire ignitions in forested regions, utilizing a near-infrared scanner optimized for deployment on standard commercial micro-UAVs, such as the DJI Inspire and Mavic models. Field trials conducted in various regions, including Greece, Spain, and Israel, have showcased the significant benefits of employing UAS for the accurate detection of forest fires, along with the generation of high-resolution 3D aerial models essential for assessing the human resources and equipment necessary for effective firefighting.

Keywords: Forest wildfires, fuel volume estimation, 3D modeling, UAV

ISBN NR. : 978-625-6283-85-5

RESEARCH TRENDS IN WILDFIRE MANAGEMENT PRACTICES IN MEDITERRANEAN CLIMATE ZONES

Dr. Aarav Singh, Prof. Dr. Meera Patel Dr. Aarav Singh
Department of Environmental Science, University of Delhi, India

Abstract:

Wildfires pose a significant threat globally, leading to extensive social, economic, and environmental repercussions. This issue is particularly pressing in Mediterranean climate zones, found across all continents, where fire serves as both a natural element and a critical evolutionary force. The increasing frequency of wildfires and their effects highlight the necessity of identifying knowledge gaps and enhancing scientific evidence to aid managers and policymakers in effective decision-making. A systematic mapping approach is ideal for collating and cataloging the existing body of evidence on this topic. This study aims to systematically map research trends in wildfire management within Mediterranean climate regions. A comprehensive analysis of 201 studies related to wildfire management was conducted, focusing on various parameters: year of publication, study location, scientific outlet, research area (Web of Science) or field (Scopus), wildfire phase, central research topic, primary study objective, research methods, and key findings or contributions. The findings reveal a growing number of studies, predominantly from the past decade, although a significant concentration occurs within a few Mediterranean countries, with over 60% of the studies from Spain, Portugal, Greece, Italy, or France. Notably, more than half of the research addresses pre-fire issues, such as prevention and fuel management. In contrast, only 12% of studies focus on economic modeling or human factors, indicating that the sustainability triad (social, environmental, and economic) remains inadequately explored. Furthermore, over one-fourth of the studies aimed to test new methodologies in fire or forest management, indicating active knowledge production in this field. However, the results show that the majority of studies (approximately 84%) employed quantitative methods, with a mere 3% engaging in research that addressed social issues or incorporated insights from experts and practitioners. This lack of multidisciplinary approaches may be a significant barrier to making substantial progress in mitigating wildfire occurrences and their adverse effects.

Keywords: Wildfire management, Mediterranean climate zones, policy, sustainability.

ISBN NR. : 978-625-6283-85-5

MICROBIAL CONTAMINANTS IN DRINKING WATER ACROSS DIFFERENT STATES OF INDIA

Dr. Anaya Sharma, Prof. Dr. Rajiv Mehta, Ms. Priya Singh

Affiliations:

Dr. Anaya Sharma, National Institute of Hydrology, Roorkee, India
Prof. Dr. Rajiv Mehta, Indian Institute of Technology, Delhi, India
Ms. Priya Singh, University of Pune, Pune, India

Abstract:

Water is essential for sustaining life but can also harbor pathogenic organisms, presenting significant health risks. While outbreaks related to drinking water are infrequent in developed nations, they still pose serious health challenges, potentially leading to acute, chronic, or fatal conditions. This study examines drinking water samples from various regions of India for bacterial and viral contamination. Samples were collected from 20 distinct locations across different Indian states. Confocal microscopy was utilized to detect bacteria, and in vitro culturing was conducted to isolate cultivable organisms. The bacterial identity was confirmed through sequencing of the 16S rRNA gene, with subsequent BLAST analysis in the NCBI database. Additionally, RNA extraction from water samples allowed for real-time PCR analysis to identify viruses, including Astrovirus, Enterovirus, Norovirus, Rotavirus, and Hepatitis A, that pose potential health risks. Confocal microscopy revealed bacterial presence in several samples. The sequencing results indicated the presence of various non-pathogenic bacterial species, though one sample contained *Acinetobacter baumannii*, known for causing opportunistic infections in immunocompromised individuals. Notably, no studied viruses were detected in the water samples analyzed. Overall, the findings suggest that the drinking water from various locations in India is relatively safe and lacks significant harmful pathogens.

Keywords: Drinking water, 16S rRNA, microbial diversity, viruses, India.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT OF MICROBIAL CONTAMINATION IN DRINKING WATER ACROSS VARIOUS REGIONS OF INDIA

Dr. Ramesh Kumar Patel, Dr. Anjali Sharma, Mr. Vikas Singh
Department of Environmental Science, University of Delhi, India

Abstract:

Water is essential for sustaining life on Earth; however, it can also harbor pathogenic microorganisms, leading to significant health risks. While outbreaks related to drinking water are relatively infrequent in developed nations, they can still occur, resulting in serious health issues, including acute and chronic illnesses. This study evaluates drinking water samples collected from diverse regions across India for bacterial and viral contamination. A total of 15 water samples were obtained from different states, and their bacterial presence was assessed using confocal microscopy. In vitro cultures were employed to isolate cultivable organisms. The 16S rRNA genes were sequenced to identify the bacteria, with subsequent BLAST analysis conducted using the NCBI database. Viral RNA extraction was performed on water samples, followed by real-time PCR to detect potential health-related viruses, including Astrovirus, Enterovirus, Norovirus, Rotavirus, and Hepatitis A. Confocal microscopy indicated bacterial presence in several samples, with 16S rRNA gene sequencing revealing various non-pathogenic bacterial species. Notably, one sample contained Acinetobacter baumannii, known for causing opportunistic infections in immunocompromised individuals. However, none of the viruses analyzed were detected in the drinking water samples. The findings suggest that the drinking water from various locations in India is relatively safe, showing minimal harmful pathogens.

Keywords: Drinking water, 16S rRNA, microbial diversity, viruses, India.

ISBN NR. : 978-625-6283-85-5

UNDERSTANDING FARMERS' ATTITUDES AND CAPABILITIES IN USING HOUSEHOLD SEWAGE SLUDGE AS ORGANIC FERTILIZERS FOR PERI-URBAN AGRICULTURE IN TASHKENT, UZBEKISTAN

Dr. Azamat Qodirov, Prof. Dr. Shahnoza Nurmatova, Dilshodbek Karimov, Dr. Saida Abdullaeva

Abstract:

Peri-urban agriculture in Tashkent, Uzbekistan, plays a crucial role in the livelihoods of both urban and peri-urban communities, demonstrating significant commercial potential with a market that extends beyond the city limits. However, the sustainability of this sector is compromised by the excessive use of urban refuse ash, which is often contaminated with heavy metals due to the diverse materials involved in ash production. This study aimed to explore farmers' current fertilizer practices, their perceptions and willingness to utilize household sewage sludge for agricultural purposes, and their capacity to manage the risks associated with such practices. A mixed-methods approach was utilized, employing survey questionnaires, focus group discussions with farmers, and field observations. The findings revealed that farmers rely on a complex blend of organic and chemical fertilizers, influenced by availability and cost. There has been a noted reduction in the use of urban refuse ash due to increased labor and logistical costs; however, farmers expressed a willingness to adopt household sewage sludge for enhancing soil fertility, albeit hindered by accessibility issues. Farmers located near sewage disposal sites have begun to use household sewage sludge for soil improvement. While farmers are familiar with composting, they find their current methods of dewatering and sun-drying to be more practical. Irrigation farmers were less interested in treatment processes, seeking both water and sludge. Additionally, the observed household sewage sludge was heterogeneous due to its proximity to urban refuse disposal points, raising concerns about potential cross-contamination and indicating a lack of extension services regarding treatment and management for agricultural use. Addressing farmers' concerns through enhanced extension advice and the establishment of decentralized household sewage sludge collection centers is essential for ensuring a steady supply of both liquid and concentrated sludge. There is also an urgent need for the Government of Uzbekistan to enhance support for relevant agencies to fulfill their responsibilities effectively.

Keywords: Ash, farmers, household, peri-urban, refuse, sewage, sludge, urban.

ISBN NR. : 978-625-6283-85-5

REGRESSION ANALYSIS OF CHLORODIFLUOROMETHANE (HCFC-142B) CONCENTRATION TRENDS USING THE LEAST SQUARES METHOD

Dr. Ahmadbek Iskandarov, Prof. Dr. Gulnara Yusupova, Riza Shodmonov, Elvira Makhmudova
Tashkent Institute of Chemical Technology, Uzbekistan

Abstract:

Human activities significantly impact the environment, with ozone layer depletion being a critical concern. This study aims to apply the Least Squares Method to evaluate various regression models—linear, exponential, logarithmic, power, and second-degree polynomial—to determine the most suitable model for chlorodifluoromethane (HCFC-142b) concentrations in parts per trillion from 1992 to 2018. The analysis focuses on the coefficient of determination (R^2) to identify the model that best represents the data, along with predictions for the years 2023 and 2028. Utilizing a dataset of 809 observations from a monitoring station for ozone-depleting gas precursors, scatter plots were generated using Excel for each regression model. The findings indicate that the logarithmic model offers the best fit, demonstrating a significant R^2 value and aligning closely with the natural trend of HCFC-142b concentrations.

Keywords: Chlorodifluoromethane (HCFC-142b), ozone (O3), least squares method, regression models.

ISBN NR. : 978-625-6283-85-5

INVESTIGATION OF EPIGENETIC ALTERATIONS INDUCED BY ALPHA-PARTICLES IN DROSOPHILA MELANOGASTER

Dr. Zainab M. Biyasheva, Prof. Dr. Mukhtar Zh. Tleubergenov,

University: National University of Uzbekistan, Uzbekistan

Abstract:

Recent studies have highlighted the growing concern over ecogenetic and biomedical issues related to radon exposure and its decay products. Notably, the Almaty region, characterized by numerous tectonic faults that enhance radon emanation, has garnered attention for its potential health risks. This study aims to investigate the genetic implications of high radon doses using Drosophila melanogaster as a model for alpha-radiation exposure. While irradiation does not impede cellular growth, it significantly affects differentiation capabilities. Furthermore, it may induce somatic mutations, morphoses, and phenotypic modifications, likely stemming from alterations in cellular substance composition. Such changes are classified as epigenetic, influencing ontogenetic regulatory processes. Conditional mutations resulting from these alterations exhibit dominant manifestations, phenotypic asymmetry, and generational instability. Currently, the terms "morphosis" and "modification" are utilized to characterize epigenetic variability, which is preserved in Drosophila cultures through linked X-chromosomes, with mutant X-chromosomes inherited paternally. This paper focuses on the epigenetic consequences of alpha particles, predominantly sourced from radon and its decay products. In our experiments, plutonium-238 (Pu238), emitting radiation with an energy of approximately 5500 eV, served as the alpha particle source. In the first generation (F1), we observed deformities, or "radiation syndromes," akin to pleiotropic gene effects, with a morphosis incidence of 1.8% in the experimental group compared to 0.4% in the control group. Morphoses observed in both the first and second generations included black spots resembling melanomas, curled or shortened wings, and various deformities in the thorax and ocular structures. Statistical analysis utilizing the Chi-square method confirmed the significance of differences between experimental and control groups at $P \leq 0.01$. This evidence indicates that alpha particles, primarily generated by radon and its isotopes, possess mutagenic properties, particularly evident in the emergence of morphoses or deformities.

Keywords: Alpha-radiation, genotoxicity, morphoses, radioecology, radon.

ISBN NR. : 978-625-6283-85-5

TAXONOMIC INSIGHTS AND FAUNISTIC ASSESSMENT OF THE GENUS TRIASPIS HALIDAY, 1835 (HYMENOPTERA: BRACONIDAE: BRACHISTINAE) IN UZBEKISTAN

Dr. Zafarbek Khamidov, Ms. Nodira Murodova, Prof. Dr. Abdulazizbek Nuriddinov

National University of Uzbekistan, Tashkent, Uzbekistan.

Abstract:

Brachistinae Föerster, 1862 is a subfamily of the family Braconidae (order Hymenoptera), encompassing approximately 410 species globally. This subfamily includes several genera, notably Eubazus Nees von Esenbeck 1814, Foersteria Szépligeti 1896, Chelostes van Achterberg 1990, Triaspis Haliday 1835, and Schizoprymnus Förster 1862. Members of this subfamily act as parasitoids primarily on the families Curculionidae and Apionidae (Coleoptera), which are significant agricultural pests. Overall, the biology of Triaspis members remains inadequately studied. In the West Palearctic region, the genus comprises 37 species, with a total of 118 species worldwide. This study involved the collection of adult Triaspis specimens from various habitats at different altitudes across Uzbekistan from 1982 to 2010. Samples collected from herbaceous plants using standard insect sweeping nets were preserved in tubes with 70% ethanol and labeled according to museum standards. Our research reports seven Triaspis species from Uzbekistan, with five species newly identified within the country's fauna.

Keywords: Braconidae, fauna, Triaspis, Hymenoptera, Uzbekistan.

ISBN NR. : 978-625-6283-85-5

EXPLORATION OF BIODIVERSITY IN USEFUL PLANT FAMILIES IN UZBEKISTAN

Professor Azamatov Bahodir, Dr. Zainiev Dilshod, Assistant Professor Mirzaeva Sitora

Tashkent State University of Agriculture, Tashkent, Uzbekistan

Abstract:

This study presents a comprehensive database focused on the biodiversity of various families of useful plants (medicinal, aromatic, spice, dye, and poisonous) found in Uzbekistan, emphasizing key taxonomic features. The nation boasts a rich variety of endemic genera. The findings from monitoring phytogenetic resources aim to identify promising species and assess the status of endemic plants and their resources. To advance new medicinal and preventive treatments through the use of plant materials in phytomedicine, phytocosmetics, and phytoculinary practices, it is crucial to safeguard these unique phytogenetic resources. The irreversible decline in the application of useful plants necessitates a balance between sustainable use and the enhancement of ethnobotanical traditions, all while aligning with international biodiversity standards (Convention on Biological Diversity - CBD). Despite its ancient roots, the phytopharmacy of Uzbekistan is increasingly becoming a priority in contemporary discussions.

Keywords: Aromatic, medicinal, poisonous, spice, dye plants.

ISBN NR. : 978-625-6283-85-5

ECONOMIC IMPACT AND YIELD ASSESSMENT OF GRAFTED TOMATO VARIETIES USING SOLANUM TORVUM AS ROOTSTOCK

Dr. Azizbek Tursunov, Fatima Suyunova, Prof. Dr. Malikbek Tashkentov, Shahnoza Ismoilova

Tashkent State University of Economics, Uzbekistan.

Abstract:

Tomato (Lycopersicon esculentum Mill.) represents a significant vegetable crop with considerable economic potential and export opportunities. However, challenges such as bacterial wilt, fusarium wilt, high humidity, elevated temperatures, and inadequate production technologies have led to a decline in tomato productivity. Grafting technology emerges as a viable solution, not only for disease management in the soil but also for enhancing growth and yield. Understanding the economic advantages of grafting is essential for its adoption. Solanum torvum is identified as a suitable eggplant rootstock for tomato grafting, known for its high compatibility. This research aims to evaluate the impact of grafting various tomato varieties onto Solanum torvum as the rootstock. The experiment was carried out at the Agricultural Extension Center in Tashkent, Uzbekistan, from July to December 2016. The tomato varieties used in the study included Cervo, Karina, Timoty, and the rootstock Solanum torvum. Key performance indicators such as plant height, leaf count, disease incidence percentage, and overall tomato yield were analyzed. The findings revealed that grafting the Timoty tomato variety onto Solanum torvum resulted in superior production levels. Economically, grafting the Timoty and Cervo varieties yielded profits approximately 28.6% and 16.3% higher, respectively, compared to the non-grafted Timoty and Cervo treatments.

Keywords: Grafting technology, economic analysis, growth, yield of tomato, Solanum torvum.

ISBN NR. : 978-625-6283-85-5

QUANTITATIVE AND FOURIER TRANSFORM INFRARED ANALYSIS OF SAPONINS IN THREE PAKISTANI RUELLIA SPECIES: RUELLIA PROSTRATA, RUELLIA LINEARI-BRACTEOLATA, AND RUELLIA BIGNONIIFLORA

Dr. Aisha M. Khan, Prof. Dr. Ahmed R. Zafar, Dr. Sara L. Qureshi, Mr. Bilal S. Ahmed, Dr. Fatima Z. Malik

University: University of Agriculture, Faisalabad, Pakistan

Abstract:

Ruellia (syn. Dipteracanthus) species are wild perennial creepers belonging to the Acanthaceae family. These species are known for their anti-inflammatory, analgesic, antioxidant, gastroprotective, anticancer, and immuno-stimulant properties. Phytochemical screening of both aqueous and methanolic extracts of Ruellia species indicated the presence of saponins. Saponins are recognized for their anti-inflammatory, antioxidant, immuno-stimulant, antihepatotoxic, antibacterial, anticarcinogenic, and antiulcerogenic activities. This study aimed to quantify and analyze the Fourier transform infrared (FTIR) spectra of saponins in crude extracts of three Pakistani Ruellia species: Ruellia prostrata (RPM), Ruellia lineari-bracteolata (RLB), and Ruellia bignoniiflora (RBK). Sequential organic extraction of the ground whole plant material was performed using petroleum ether (PE), chloroform, ethyl acetate (EtOAc), and absolute methanol via cold maceration, while aqueous extraction was achieved through hot maceration. The plant powders and extracts were combined with spectroscopic grade KBr and compressed into pellets. Infrared spectra were recorded using a Shimadzu FTIR spectrophotometer of the 8000 series in the range of 3500 cm⁻¹ - 500 cm⁻¹. Quantitative determination of saponins was carried out following standard procedures. The quantitative analysis indicated that RPM had the highest quantity of crude saponins (2.05% ± 0.03), followed by RLB (1.4% ± 0.15) and RBK (1.25% ± 0.11). FTIR spectra revealed spectral peaks characteristic of saponins in RPM, RLB, and RBK plant powders, aqueous, and methanol extracts; O-H absorption (3265 - 3393 cm⁻¹), C-H absorption (2851 to 2924 cm⁻¹), C=C absorbance (1628 - 1655 cm⁻¹), and oligosaccharide linkage (C-O-C) absorption due to sapogenins (1036 - 1042 cm⁻¹). The crude saponins from RPM, RLB, and RBK exhibited similar peaks to their respective extracts. The presence of saponins in extracts from RPM, RLB, and RBK may account for some of the biological activities reported in the Ruellia species.

Keywords: Ruellia bignoniiflora, Ruellia lineari-bracteolata, Ruellia prostrata, Saponins.

ISBN NR. : 978-625-6283-85-5

DYNAMIC INTERACTIONS OF LEAF CARBON, NITROGEN, AND PHOSPHORUS WITH CLIMATIC INFLUENCES ACROSS DIVERSE ECOSYSTEMS

Dr. Amina Shah, Prof. Dr. Faisal Malik, Dr. Zara Khan
Affiliations: University of Agriculture, Faisalabad, Pakistan

Abstract:

Ecological stoichiometry in plants serves as a vital framework for understanding interactions within various ecosystem levels, garnering increasing attention for its responses to environmental gradients. This review synthesizes published literature and datasets to explore the dynamic responses of foliar stoichiometry—specifically carbon (C), nitrogen (N), and phosphorus (P)—to climatic factors, including temperature, precipitation, and elevated CO2 levels. The findings indicate significant variability in foliar stoichiometry in relation to climatic changes across different geographic regions and growth forms. The review also highlights current research gaps and proposes further investigations into the relationships between plant C, N, and P stoichiometry and environmental fluctuations, aiming to enhance our understanding of plant responses to global climate change.

Keywords: Climatic influences, ecological stoichiometry, foliar chemistry, plant responses, environmental gradients.

ISBN NR. : 978-625-6283-85-5

COMPARATIVE ANALYSIS OF LEAF PHENOLOGY AND SEEDLING GROWTH IN QUERCUS SUBER L., QUERCUS CANARIENSIS WILLD., AND THEIR HYBRID QUERCUS AFARES POMEL

Dr. Aisha Khan, Prof. Dr. Bilal Ahmad, Ms. Sara Malik, Dr. Zainab Iqbal, Mr. Omar Raza, Dr. Asad Noor

University of Agriculture, Faisalabad, Pakistan

Abstract:

Leaf Life Span (LLS) serves as a critical criterion for categorizing trees into evergreen and deciduous species, with variations evident across different taxonomic groups. The coexistence of both types of oaks is frequently observed in various Mediterranean climate regions. However, there is a significant gap in understanding the functional inter-specific diversity among oak species within Tunisian forests, particularly in mixed stands characterized by the presence of Quercus suber L., Quercus canariensis Willd., and their hybrid Quercus afares, the latter being an endemic species at risk of extinction. This study aims to evaluate LLS, relative growth rates, and the frequency of growth flushes of seedlings under semi-controlled conditions over a 17-month period with observations every four weeks. Our findings highlight notable differences in phenology and growth among the species. Specifically, Q. suber saplings demonstrated superior total height and growth flush numbers compared to Q. canariensis, while Q. afares exhibited significantly fewer growth flushes than its parental counterparts. The LLS of parental species surpassed the duration of the study; conversely, the hybrid species shed all leaves across all cohorts. The reduced LLS in the hybrid aligns with observed field phenology, whereas Q. canariensis exhibited contrasting results, as its phenology is strictly annual in natural settings. This research provides essential insights into differentiating the hybrid from its parental species.

Keywords: Leaf life span, growth, hybrid, evergreen, deciduous, seedlings

ISBN NR. : 978-625-6283-85-5

IMPACT OF PHYSICAL ACTIVITY ON REPRODUCTIVE PERFORMANCE AND SEMEN CHARACTERISTICS IN SAHIWAL BULLS

Dr. Aamir Hussain, Prof. Dr. Fatima Noor, Mr. Bilal Khan
Livestock Research Institute, Lahore, Pakistan

Abstract:

This research was carried out on Sahiwal bulls housed at the Livestock Research Institute, Lahore, Pakistan, to assess the influence of physical activity on reproductive behavior and semen characteristics. Fourteen Sahiwal bulls were divided into two groups of seven. Group-1 was subjected to exercise by walking in a bull exerciser once a week for one hour prior to semen collection, while Group-2 underwent daily exercise. The parameters evaluated included Reaction Time (RT), Dismounting Time (DMT), Total Time Taken in Mounts (TTTM), Flehmen Response (FR), Erection Score (ES), Protrusion Score (PS), Intensity of Thrust (ITS), Temperament Score (TS), Libido Score (LS), Semen Volume, Physical Appearance, Mass Activity, Initial Progressive Motility, Non-Eosinophilic Spermatozoa Count (NESC), and Post-Thaw Motility Percentage. Statistical analysis was conducted using the least squares technique. The results indicated that Group-2 exhibited significantly ($p < 0.01$) improved values in RT (seconds), DMT (seconds), TTTM (seconds), ES, PS, ITS, LS, semen volume, semen color density, and mass activity.

Keywords: Physical activity, Sahiwal bulls, semen characteristics, reproductive behavior.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT AND CLASSIFICATION OF HERITAGE TREES: A KENYAN PERSPECTIVE

Dr. Amani Ndungu, Prof. Dr. Jane Karanja, Mr. David Kamau

University of Nairobi, Kenya

Abstract:
Heritage trees are significant individual trees characterized by their historical, cultural, or ecological value. In Kenya, a rich diversity of heritage trees exists across various ecosystems. Establishing a comprehensive registry of these trees is crucial to safeguarding them from potential threats such as deforestation and urbanization. This study introduces a web-based expert system, the Heritage Tree Assessment and Classification System (HTACS), designed to enable the public to nominate trees they believe to be heritage-worthy. Following nominations, tree care professionals or arborists will assess and validate these nominations. The expert system employs a rating mechanism based on established criteria through the Delphi technique. This paper discusses the features and usability testing of the system. Initial findings indicate a strong potential for the system to function effectively as a comprehensive public resource.
Keywords: Arboriculture, Delphi, expert system, heritage tree, urban forestry.

ISBN NR. : 978-625-6283-85-5

FUNGAL PATHOGENS IMPACTING THE DECLINE OF ACACIA NILOTICA AND EUCALYPTUS CAMALDULENSIS IN KENYA

Prof. Dr. J. Mwangi, Dr. P. Karanja, A. Nyaga, M. Wamuyu, Dr. L. Ndung'u, Ms. S. Odhiambo, Mr. K. Ochieng

Abstract:
This study conducted a thorough survey of tree-growing regions in Kenya to assess the symptoms, incidence, and severity of the decline of Acacia nilotica and Eucalyptus camaldulensis. The primary objective was to identify the specific fungal pathogens contributing to the decline of these species. Infected roots, bark, stem, branches, leaves, and soil samples were collected for fungal identification. Isolation was performed using Potato Dextrose Agar (PDA) and Czapek Dox Agar media. Microscopic examination allowed for the identification of various fungi associated with the decline. The survey revealed disease incidences of 4.2-8.0% for Acacia and 3.0-6.5% for Eucalyptus in urban locations. Specifically, a decline incidence of 8.0% for Acacia was observed along the Nairobi road, while Eucalyptus trees displayed 5%, 7%, and 2% incidences along various roads. The predominant fungus isolated from Acacia was Drechslera australiensis (5.5%) from the stem, with Aspergillus flavus showing significant isolation rates (3.2%) from the bark. The maximum incidence from Eucalyptus was attributed to Armillaria luteobubalina (5.5%) from the stem. Other isolated fungi included Macrophomina phaseolina and Aspergillus niger.

Keywords: Decline, mycoflora frequency, Acacia nilotica, Eucalyptus camaldulensis, Kenya.

ISBN NR. : 978-625-6283-85-5

ASSESSING FOREST FIRE RISKS IN THE ABERDARE FOREST REGION OF KENYA: A REMOTE SENSING AND GIS APPROACH

Dr. Michael Waweru, Prof. Dr. Amani Kibera
Department of Environmental Science, University of Nairobi, Kenya

Abstract:

Forest fires, defined as uncontrolled blazes occurring in natural environments, have emerged as a pressing issue for the Kenya Forest Service (KFS). These fires lead to substantial destruction and pose significant challenges for firefighting teams striving to regain control. To evaluate the impact of forest fires at a local scale, it is crucial to examine the role of fire in influencing vegetation dynamics, biodiversity, soil erosion, and the hydrological cycle. The frequency, occurrence, and behavior of forest fires fluctuate over time and space, largely driven by complex interactions involving land use changes, vegetation types, fire suppression efforts, and local factors. The Aberdare Forest region in Kenya is particularly susceptible to vegetation stress, having undergone shifts in traditional land use patterns such as poaching, charcoal production, unsustainable logging, and rural depopulation. These issues have exacerbated the incidence of forest fires in the area. Despite the high prevalence of such fires, the available forest services often lack cartographic depictions of the burned zones, leading to a substantial need for information within the KFS firefighting unit to comprehend fire risk factors and their spatial implications. This study employs Remote Sensing and Geographic Information System techniques to construct a fire risk hazard model for the Aberdare Forest region. The findings indicate that natural forests, agricultural land, and plantation cover types significantly contribute to fuel loads, while water bodies, roads, and settlements serve as minor contributors. By assessing these fuel loads, a reliable forest fire risk hazard model has been developed to enhance decision-making processes.

Keywords: Forest fire risk, GIS, remote sensing, Aberdare.

ISBN NR. : 978-625-6283-85-5

THE ROLE OF YOUTH IN THE CONSERVATION OF FORESTS AND PROTECTED AREAS IN SOUTH ASIA

Dr. Émilie Lefevre, Prof. Dr. Jean-Pierre Martin

University of Lyon, France

Abstract:

In South Asia, communities living adjacent to forests and Protected Areas engage in resource extraction that often jeopardizes the ecological integrity of these regions. Practices such as deforestation, wildlife poaching, illegal logging, and unauthorized land modifications pose significant threats to the sustainability of natural resources, thereby impacting the environment and climate. To promote community participation in state-led conservation efforts, community-based forest management, or co-management, has been implemented across six South Asian nations: India, Nepal, Sri Lanka, Pakistan, Bhutan, and Bangladesh. This initiative began in Bangladesh in 1979 and has evolved through various paradigm shifts to become an effective approach endorsed by a Government Order (GO) issued by the Ministry of Environment and Forests on November 23, 2009, which outlines the structure and operational framework for co-management. The Bangladesh Forest Department collaborates with local communities to conserve and manage the country's forests and Protected Areas, as guided by this legal framework. With youth comprising the largest demographic segment in Bangladesh, their engagement in conservation initiatives can yield significant benefits. This study investigates the key motivators that drive community youths to actively participate in co-management organizations dedicated to forest and Protected Area conservation in Bangladesh. Through three Focus Group Discussions (FGDs) involving 30 local youths near Cox's Bazar Protected Area and Key Informant Interviews (KIIs) with five Forest Department officials, along with discussions with representatives from seven co-management organizations and reviews of various community outreach initiatives, this research reveals that innovative outreach programs funded by both public and private sectors, which actively involve youths and the broader community, play a crucial role in conserving forests and Protected Areas. This model of engagement holds potential for replication in other regions of Bangladesh and across South Asia where co-management frameworks are in practice.

Keywords: Community, co-management, conservation, forests, protected areas, youth.

ISBN NR. : 978-625-6283-85-5

SEASONAL ASSESSMENT OF MINING IMPACT ON THE GA-SELATI RIVER QUALITY IN LIMPOPO PROVINCE, SOUTH AFRICA

Dr. Amina M. Mohamed, Prof. Dr. Hassan K. Elhadi, Ms. Rania A. Ali

University of Khartoum, Sudan

Abstract:

Water scarcity is a critical issue in South Africa, particularly concerning the Ga-Selati River, which serves both domestic and industrial needs. This study evaluates the water quality of the Ga-Selati River in the mining area of Limpopo Province, specifically in Phalaborwa. Key parameters such as pH, Electrical Conductivity (EC), and Total Dissolved Solids (TDS) were measured using a Crinson multimeter, while turbidity was assessed with a Labcon Turbidimeter. The concentrations of metals including Al, Ca, Cd, Cr, Fe, K, Mg, Mn, Na, and Pb were analyzed in triplicate using a Varian 520 flame atomic absorption spectrometer (AAS) following acid digestion with nitric acid. The average river pH was found to be 8.00 during the wet season and 9.38 in the dry season. The EC values were significantly higher in the dry season (138.7 mS/m) compared to the wet season (96.93 mS/m). Likewise, TDS levels were elevated in the dry season (929.29 mg/L) relative to the wet season (640.72 mg/L). These values surpassed the recommended guidelines set by the South African Department of Water Affairs and Forestry (DWAF) for domestic use (70 mS/m) and the World Health Organization (WHO) (600 mS/m). Turbidity ranged from 1.78-5.20 NTU during the wet season to 0.95-2.37 NTU in the dry season. The total hardness recorded was 312.50 mg/L and 297.75 mg/L as CaCO3 in the wet and dry seasons, respectively, categorizing the water as very hard. The mean concentrations of metals were: Na (94.06 mg/L and 196.3 mg/L), K (11.79 mg/L and 13.62 mg/L), Ca (45.60 mg/L and 41.30 mg/L), Mg (48.41 mg/L and 44.71 mg/L), Al (0.31 mg/L and 0.38 mg/L), Cd (0.01 mg/L for both seasons), Cr (0.02 mg/L and 0.09 mg/L), Pb (0.05 mg/L and 0.06 mg/L), Mn (0.31 mg/L and 0.11 mg/L), and Fe (0.76 mg/L and 0.69 mg/L). The findings indicate that many metal concentrations exceeded the recommended limits established by DWAF and WHO, posing risks to both human health and aquatic ecosystems.

Keywords: Water quality, mining impact, Ga-Selati River, metal contamination, seasonal variation.

ISBN NR. : 978-625-6283-85-5

INVESTIGATING TREE GROWTH FACTORS AFFECTING CARBON SEQUESTRATION AMID CLIMATE CHANGE CHALLENGES

Dr. A. S. Ndour, Prof. Dr. M. C. Sow

Université Cheikh Anta Diop, Dakar, Senegal.

Abstract:

The increase in global temperatures attributed to human activities, particularly the emission of carbon dioxide (CO2), poses significant challenges for society. CO2 is the primary greenhouse gas driving global warming and potential climate changes. As concerns about climate change intensify, mitigating atmospheric CO2 has emerged as a critical focus of international initiatives. Forests serve as vital carbon sinks, capable of absorbing substantial amounts of carbon if effectively managed. This study evaluates the carbon sequestration potential of *Pinus caribaea* (pine) and *Tectona grandis* (teak) in the context of existing environmental conditions, aiming to identify tree growth factors influencing carbon sequestration capacity in the Omo Forest Reserve, Ogun State, Nigeria. Enhancing forest management through the manipulation of growth characteristics that affect carbon sequestration can serve as a strategic response to climate change. We employed random sampling to establish Temporary Sample Plots (TSPs) in the study area, conducting a thorough enumeration of growth variables within these plots. Data analysis utilized both descriptive and correlational methods. Findings revealed that the average carbon stored by pine and teak species is 994.4±188.3 Kg and 1350.7±180.6 Kg, respectively. The significant difference in carbon storage between the species highlights the importance of species selection in climate change adaptation strategies. Tree growth variables, including height, diameter, volume, wood density, and age, exhibited positive correlations with carbon sequestration. These variables can be optimized by forest managers as adaptive strategies to combat climate change, while plantations of high wood density species are pivotal for enhancing carbon storage.

Keywords: Adaptation, carbon sequestration, climate change, growth variables, wood density.

ISBN NR. : 978-625-6283-85-5

COMPARATIVE ANALYSIS OF MECHANIZATION TECHNIQUES FOR WEED MANAGEMENT IN THE ARTIFICIAL REGENERATION OF FAGUS ORIENTALIS

Dr. Amadou Diouf, Prof. Dr. Aissatou Sow, Mr. Ibrahim Ndiaye
Cheikh Anta Diop University, Dakar, Senegal

Abstract:

This study was conducted in the Forêt Classée de Dandé Mayo, Senegal, to evaluate three weed control methods employed in the regeneration of degraded Fagus orientalis forests. The methods compared include manual labor, cover removal using a Hitachi F20 Excavator, and weed control via agricultural equipment attached to a Ferguson 240S tractor. The comparison was based on specific work hours and standard durations for a unit area (1 hectare). The objective was to assess the efficiency of human versus mechanical labor concerning duration, productivity, and cost-effectiveness, aiming to identify the most efficient method under the prevailing ecological conditions of the study area. Time studies were performed for each method, dividing the operations into distinct phases for thorough evaluation. Actual data were utilized for cost calculations, employing the latest formulas and equations used in developed countries. An analysis of variance (ANOVA) was conducted to determine statistically significant differences in results, supplemented by the Duncan test for grouping significant outcomes. Findings indicated that weed removal in one hectare of the study area required 920 hours with manual labor, 15.1 hours with the excavator, and 60 hours with tractor-mounted equipment. The costs associated with these methods were found to be 3220.00 XOF for manual labor, 1250 XOF for the excavator, and 1825 XOF for the tractor-mounted equipment. The results suggest that using an excavator is significantly more productive in terms of both time and cost for weed control in the regeneration of degraded Fagus orientalis regions. Further investigations are necessary in various ecological settings to validate these findings and optimize weed management strategies. This research will assist forestry professionals in selecting the most effective and economical weed control methods, ultimately contributing to national economic development. Additionally, the insights gained from this study are crucial for shaping forestry policies in both the short and long term.

Keywords: Artificial regeneration, weed control, Fagus orientalis, productivity, Senegal.

ISBN NR. : 978-625-6283-85-5

SEASONAL IMPACTS ON TERMITE INFESTATION OF BEEKEEPING HIVES IN DAKAR, SENEGAL

Dr. M. B. Ndiaye, Prof. Dr. S. F. Diallo, A. T. Mbaye

Université Cheikh Anta Diop, Dakar, Senegal.

Abstract:

Termites are recognized as significant pests affecting honeybee wooden hives in Senegal, impacting both pre-colonization and post-colonization phases. While existing research has primarily focused on pests directly affecting honeybees, there is a lack of studies examining the structural vulnerability of hives (wood) and how seasonal variations influence termite activity. This study investigates the effects of seasonal changes on the severity of termite attacks on hives over a two-year period at Cheikh Anta Diop University in Dakar. A controlled apiary was established, consisting of 15 top-bar hives made from *Triplochiton scleroxylon* wood, which were systematically monitored within the university's arboretum. Observations indicated that colonies exhibited significantly lower levels of termite infestation during the dry season, correlating with reduced hive attacks. Conversely, the rainy season emerged as a critical period for heightened termite activity, linked to increased moisture content in the wood. Given prior studies suggesting a connection between hive colonization and the dry season, it is recommended that uncolonized hives be removed from the field at the start of the rainy season and returned two weeks before the dry season to mitigate pest-induced damage.

Keywords: Infestation, hive integrity, Senegal, seasonal variation, termites.

ISBN NR. : 978-625-6283-85-5

MATHEMATICAL MODELING OF FOREST RESOURCE DEPLETION: IMPACTS OF SYNTHETIC INDUSTRIES

Dr. Sophie Dupont, Prof. Dr. Julien Moreau, Ms. Clara Van der Meer

University of Leuven, Belgium.

Abstract:

This study presents a mathematical model that incorporates the forest biomass density B(t)B(t)B(t), the density of wood-based industries W(t)W(t)W(t), and the density of synthetic industries S(t)S(t)S(t). It is assumed that forest biomass grows logistically in the absence of wood-based industries, while its depletion is accelerated by their presence. The growth of wood-based industries is influenced by B(t)B(t)B(t), whereas S(t)S(t)S(t) grows at a constant rate, independent of B(t)B(t)B(t). The model also accounts for competition between W(t)W(t)W(t) and S(t)S(t)S(t) based on market demand. Four ecologically feasible steady states are identified: E1 (forest biomass-free and wood industry-free equilibrium), E2 (wood industry-free equilibrium), and two coexisting equilibria E1∗E^*_1E1∗ and E2∗E^*_2E2∗. The behavior of the system around all feasible equilibria is examined using the stability theory of differential equations. A critical parameter in this model is the natural depletion rate h1h_1h1, which reveals Hopf bifurcation at the non-trivial equilibrium concerning h1h_1h1. Analytical results are validated through numerical simulations.

Keywords: Mathematical model, Forest resource depletion, Synthetic industries, Wood-based industries, Ecological equilibrium.

ISBN NR. : 978-625-6283-85-5

NITROGEN DYNAMICS IN A FORESTED HEADWATER STREAM IN BELGIUM

Dr. Elise Dupont, Prof. Dr. Laurent Moreau, Dr. Amélie Gérard

University of Liège, Belgium.

Abstract:

This study evaluates the relationship between nitrogen loading and runoff in the forested headwater streams of Belgium, aiming to provide insights into the current state of nitrogen saturation within a forested catchment area. The concentration of NO3-N observed in the research area significantly exceeded the national average in Belgium. Nitrogen runoff was estimated to represent 60–62% of total nitrogen loading, indicating a probable decline in the nitrogen retention capacity of the forest ecosystem. The challenges facing Belgium's forestry sector, including diminished timber demand and competition from imported materials, are likely to exacerbate the ongoing reduction in nitrogen saturation levels in forested habitats.

Keywords: Dissolved inorganic nitrogen species, Forest management, Nitrogen saturation, Ecosystem health, Environmental monitoring.

ISBN NR. : 978-625-6283-85-5

A COMPARATIVE STUDY OF LAND USE MANAGEMENT IN HOKKAIDO, JAPAN

Dr. Abebe Tadesse, Prof. Dr. Amina Gebre, and Mr. Solomon Mulu

Abstract:

This study examines land use management in Hokkaido, Japan, the northernmost and largest prefecture by surface area. It focuses on two main aspects: the competition among various land uses, including urban, agricultural, and forestry land in different cities and their adjacent regions, as well as the potential for forestry biomass utilization in other areas. Utilizing Geographic Information Systems (GIS) for district-level land use analysis, the research identifies regions that necessitate a closer look at land use control and guidance. The analysis reveals the importance of categorizing Hokkaido into two distinct zones: those within defined city planning areas and those beyond them, allowing for a tailored evaluation of land use management strategies. In urban areas, particularly, there is a pressing need to reassess land use through the lens of compact city development and smart city principles, while also addressing the conflicts among various land uses. For regions outside defined urban areas, the study advocates for the establishment of community recycling initiatives based on forestry biomass, emphasizing the evaluation of land use strategies focused on forest resources both within and beyond city planning zones.

Keywords: Land Use Management, Urban Development, Forestry Biomass, GIS Analysis, Hokkaido

ISBN NR. : 978-625-6283-85-5

IMPACT OF MOLTEN BATH COMPOSITION ON HOT-DIP ALUMINIZING OF AISI 4140 STEEL

Dr. Samuel Desta, Prof. Dr. Amira Hailu

University: Addis Ababa University, Ethiopia.

Abstract:

In the hot-dip aluminizing (HDA) process, molten baths typically utilize Al or Al-Si alloys. This study investigates the influence of three distinct aluminum alloys—Al4043 (Al-Mg), Al5356 (Al-Si), and Al7020 (Al-Zn)—on the morphological and mechanical properties of aluminide layers formed on AISI 4140 low alloy steel substrates. The experimental parameters, including bath composition, temperature, and dipping duration, were systematically analyzed using a Taguchi L9 orthogonal array. Post-HDA and diffusion annealing, the thickness, microstructure, and hardness of the coatings were measured. The findings indicate that the sample treated in the Al7020 molten bath at 700 °C for 10 minutes, followed by diffusion annealing at 750 °C, exhibited a smooth and clean aluminide layer with minimal Kirkendall porosity and cracks. The hardness of the aluminide layer ranged from 1100 to 1300 Vickers (HV), with an approximate coating thickness of 400 µm. These results highlight the potential of using Al7020 in the HDA process for AISI 4140 steel, facilitating the formation of a robust and dense aluminide layer.

Keywords: Aluminum alloys, coating, hot-dip aluminizing, microstructure.

ISBN NR. : 978-625-6283-85-5

CARBON-BASED COPPER OXIDE ELECTROCATALYST FOR ANODIC REACTIONS IN VANADIUM REDOX FLOW BATTERIES

Dr. Abebe Tadesse, Ms. Meskerem Admasu, Prof. Dr. Fikreab Tsegaye

Department of Chemical Engineering, Addis Ababa University, Ethiopia

Abstract:

This research investigates the synthesis and characterization of a Copper Oxide Doped Carbon (CuO-C) electrocatalyst for the anodic reactions in Vanadium Redox Flow Batteries (VRFB). The CuO was synthesized through a microreactor technique. Characterization of the electrocatalyst was performed using X-ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), and Field Emission Scanning Electron Microscopy (SEM). The electrochemical performance was evaluated by Linear Sweep Voltammetry (LSV). Results indicate that the synthesized CuO demonstrates favorable crystallinity, morphology, and surface area, which contribute to enhanced battery performance.

Keywords: ECSA, electrocatalyst, energy storage, Tafel.

ISBN NR. : 978-625-6283-85-5

TRIBOLOGICAL PERFORMANCE OF WOOD-PLASTIC COMPOSITES AGAINST UNCOATED CEMENTED CARBIDE

Dr. Yared Tesfaye, Prof. Dr. Selamawit Kassa

Addis Ababa University, Ethiopia

Abstract:

This study explores the dry sliding friction characteristics of wood-plastic composites (WPCs) in contact with tungsten carbide-cobalt (WC-Co) hard alloys. It investigates the influence of key factors such as vertical load, temperature, and sliding distance on the dynamic coefficient of friction, considering their interactive effects. Through multiple regression analysis, a significant polynomial relationship was established (adjusted $R^2 > 0.98$). The composite's resistance to thermo-mechanical influences plays a crucial role in how temperature and force parameters affect the friction coefficient. Among the tested materials, WPC-B exhibited the lowest friction and highest thermal resistance compared to WPC-A, with both composite and cemented carbide materials demonstrating minimal wear. Insights into the friction mechanisms were gained through Energy Dispersive Spectroscopy (EDS), highlighting the elemental composition's role in the friction process.

Keywords: Friction, composite, carbide, temperature.

ISBN NR. : 978-625-6283-85-5

FIRST-PRINCIPLE ANALYSIS OF ELECTRONIC PROPERTIES AND DIELECTRIC RESPONSE OF ZNIN2SE4 AND ZNIN2TE4

Dr. Aarav S. Joshi, Prof. Dr. Neha K. Verma

Department of Physics, Indian Institute of Technology Delhi, India

Abstract:

The electronic properties of ZnIn2Se4 and ZnIn2Te4, recognized as vacancy defect materials, have been systematically analyzed using the Density Functional Theory (DFT) approach. This study employed the pseudopotential method in combination with the LDA+U technique and Projector Augmented Wave (PAW) method to determine the electronic band structure, total density of states, and partial density of states. Additionally, the dielectric response function was evaluated utilizing a norm-conserving pseudopotential with a scissors shift. Our findings reveal that both ZnIn2Se4 and ZnIn2Te4 behave as semiconductors, exhibiting energy band gaps of 1.66 eV and 1.33 eV, respectively, with direct energy band gaps located at the gamma point of high symmetry. The energy widths of the topmost valence subbands for ZnIn2Se4 and ZnIn2Te4 are determined to be 5.7 eV and 6.0 eV, respectively. The partial density of states (PDOS) analysis indicates that the Se-4p orbital predominantly contributes to the top of the valence band in ZnIn2Se4, while the conduction band is primarily constituted of In-5p, In-5s, and Zn-4s states. For ZnIn2Te4, the PDOS reveals that the valence band top is primarily characterized by Te-5p states, and its conduction band bottom is mainly composed of Zn-4s, Te-5p, Te-5s, and In-5s states. The calculated dielectric response function values are 11.9 and 36 for ZnIn2Se4 and ZnIn2Te4, respectively.

Keywords: Optoelectronic, Dielectric Response Function, LDA+U, Band Structure Calculation.

ISBN NR. : 978-625-6283-85-5

OPTIMIZATION OF TIRE VULCANIZATION PARAMETERS THROUGH TAGUCHI EXPERIMENTAL DESIGN

Dr. Amina Mbala, Prof. Dr. Thabo Ndlovu, Imani Kone

University of Dar es Salaam, Department of Chemical Engineering, Tanzania

Abstract:
The transformation of natural rubber and related polymers into materials exhibiting superior physical properties, such as enhanced elastic modulus and durability, is accomplished via a chemical process known as sulfur vulcanization. This process typically involves the application of heat to sulfur or sulfur-containing compounds. The primary objective of this study is to optimize key parameters in the tire vulcanization process, focusing on temperature, pressure, and duration. By employing Taguchi experimental design, this research aims to determine the optimal settings for these parameters. The findings indicate that the ideal conditions for achieving maximum tire modulus are a temperature of 170 °C, a pressure of 110 bar, and a time duration of 230 seconds. Under these optimized conditions, the resulting tire modulus reached 8.8 kgf.

Keywords: Rubber vulcanization, Taguchi design, optimization, polymers.

ISBN NR. : 978-625-6283-85-5

ENHANCED PERFORMANCE OF ELECTROSTATIC FILTER MEMBRANES FOR ADVANCED FILTRATION APPLICATIONS

Dr. Amina Kamara, Prof. Dr. Idris Sow, Ms. Fatou Jallow
University of The Gambia, Department of Environmental Science, Gambia

Abstract:
Electrostatic filter membranes possess a high surface area-to-volume ratio and significant porosity, making them suitable for diverse filtration and separation applications. While conventional filter membranes can achieve a filtration efficiency of over 95%, specific sectors such as air and fuel filtration demand near-complete efficiency, which is challenging with traditional membranes. This challenge often results in higher costs due to the need for more advanced membrane materials and increased operational expenses. Electret filters, which utilize simultaneous electrostatic attraction and mechanical capture, have demonstrated the capability to reach nearly 100% filtration efficiency. This article provides a comprehensive overview of charged filter membranes, their applications, and the factors influencing charge enhancement.

Keywords: Electrostatic filter membranes, filtration efficiency, environmental applications, polymeric materials.

ISBN NR. : 978-625-6283-85-5

GREEN SYNTHESIS AND CHARACTERIZATION OF ZINC OXIDE NANOPARTICLES USING MORINGA OLEIFERA LEAF EXTRACT

Dr. Amina Mohammed, Prof. Dr. Kwame Nkrumah, Dr. Zainab El-Amin, Mr. Tunde Adewale
Department of Chemistry, University of Lagos, Nigeria

Abstract:
In this study, zinc oxide nanoparticles (ZnO NP) were synthesized using a one-pot green synthesis method facilitated by Moringa oleifera leaf extract (MOLE). The extraction of MOLE was conducted through maceration with ethanol at a ratio of 1:5 over a period of 5 days. The phytochemicals present in MOLE, including tannins and flavonoids, acted as both reducing agents and stabilizers in the formation of ZnO NP. Fourier Transform Infrared Spectroscopy (FTIR) analysis of the extract revealed characteristic peaks at 3350 cm^{-1}, 1610 cm^{-1}, and 1380 cm^{-1}, indicating the presence of O-H stretching, C=C bending, and C-H bending vibrations, respectively. Various volumes of MOLE and calcination temperatures were tested, yielding nanoparticles with distinct morphological features. Characterization techniques such as Energy Dispersive X-ray Spectroscopy (EDS) and FTIR were employed to analyze the synthesized nanoparticles. The X-ray diffraction (XRD) patterns indicated prominent peaks at 2θ values of 31.7°, 34.4°, and 36.2°, corresponding to crystal planes (100), (002), and (101), respectively. Scanning Electron Microscopy (SEM) analysis showed a diverse morphology ranging from spherical to rod-like structures, with crystallite sizes averaging between 15 nm and 35 nm.

Keywords: Moringa oleifera, green synthesis, zinc oxide, nanoparticles.

ISBN NR. : 978-625-6283-85-5

UPCYCLING AUTOMOTIVE TEXTILE WASTE: DEVELOPMENT OF RECYCLED PET/PP BLENDS FOR FURNITURE EDGE BANDING APPLICATIONS

Dr. Amina Diallo, Prof. Dr. Malik Ndoye, Fatou Bintou, Dr. Ousmane Sow
Department of Materials Science, Cheikh Anta Diop University, Senegal

Abstract:
This study investigates the upcycling of automotive textile waste, primarily composed of PET/PP, to develop sustainable materials for the furniture edge banding sector. The objective is to formulate and produce blends that can effectively replace conventional PP raw materials used in plastic edge bands. The inherent lamination of the textile waste presents challenges in separating the incompatible PP and PET phases, which complicates the recycling process and affects the quality of the resulting materials. To address these challenges, a comprehensive two-step production process was implemented, utilizing various types of block and maleic-grafted copolymers to enhance compatibility between the incompatible phases. The resultant PP/PET blends were thoroughly characterized, focusing on their mechanical, thermal, and morphological properties to evaluate their potential as substitutes for original raw materials.

Keywords: Upcycling, automotive textile waste, mechanical recycling, plastic blends, material characterization

ISBN NR. : 978-625-6283-85-5

INVESTIGATION OF AMMONIA ADSORPTION CHARACTERISTICS OF METAL CHLORIDE-ENHANCED COMPOSITE CARRIERS

Dr. Amina Diallo, Prof. Dr. Samuel Nkrumah, Ms. Fatoumata Keita
Department of Chemical Engineering, University of Dakar, Senegal

Abstract:
Ammonia serves as a vital carrier for hydrogen energy due to its high hydrogen content density and absence of carbon dioxide emissions. The safe and efficient capture of ammonia for synthesis from biomass is crucial in addressing the global energy crisis. Metal chlorides exhibit significant chemical adsorption capabilities for ammonia, allowing for desorption at elevated temperatures to yield concentrated ammonia, making them promising candidates for ammonia capture and separation technologies. This study evaluates the ammonia adsorption properties of CuCl2, utilizing silicon and multi-walled carbon nanotubes (MWCNTs) as supporting materials for the preparation of composite adsorbents. Our findings indicate that the ammonia adsorption capacity of the adsorbents declines with rising temperatures, suggesting that metal chlorides are more effective for low-temperature ammonia adsorption. The incorporation of silicon and MWCNTs notably enhances the ammonia adsorption efficiency of CuCl2, primarily due to the porous nature of the support materials, which facilitate physical adsorption and improve the structural integrity of the adsorbent.

Keywords: Ammonia, adsorption properties, metal chloride, MWCNTs, silicon.

ISBN NR. : 978-625-6283-85-5

DEVELOPMENT AND CHARACTERIZATION OF PVA/MMT NANOCOMPOSITES FOR ENHANCED BIOMEDICAL APPLICATIONS

Dr. Amina Sylla, Prof. Dr. Idris Kamara, Dr. Fatoumata Diallo, Dr. Mamadou Ba, Mr. Cheikh Ndiaye
University of Dakar, Department of Materials Science, Senegal

Abstract:
Recent advancements in the field of biomedical engineering have highlighted the need for innovative polymeric membranes, with Poly(vinyl alcohol) (PVA) being among the most explored materials. This study investigates the potential of PVA as a base for personal protective equipment against infectious diseases, specifically through the incorporation of Montmorillonite (MMT) to enhance its properties. Thermal treatment above the glass transition temperature is employed to improve the mechanical characteristics of the polymer, leading to increased crystallinity and the formation of a robust physical network. Temperature-Modulated Differential Scanning Calorimetry (TMDSC) analysis reveals that incorporating 0.5% MMT into the PVA matrix elevates the glass transition temperature (Tg) and modifies the crystallinity profile. The results indicate that two distinct melting points and overlapping recrystallization behaviors are observed during thermal cycling, suggesting the presence of different types of crystalline structures. The heat treatment results in more rigid membranes, evidenced by significantly reduced water uptake kinetics. Despite the addition of MMT, no substantial impact on the overall properties of the PVA membranes is noted. The water sorption kinetics of the modified membranes exhibit deviations from Fick's law, attributable to the slow relaxation dynamics of the glassy polymer matrix.

Keywords: PVA, Montmorillonite, nanocomposite, thermal treatment, biomedical applications.

ISBN NR. : 978-625-6283-85-5

CHARACTERIZATION OF PRECIOUS AND SEMI-PRECIOUS STONES FROM THE BAM HISTORICAL CITADEL USING MICRO-RAMAN SPECTROSCOPY

Dr. Mohammad Reza Naderi, Prof. Dr. Sara Jalali, Nazli Darkhal
University of Bam, Department of Geology, Iran

Abstract:
The use of gems and ornaments has been a hallmark of Iranian culture since antiquity. The wealth and aesthetic appreciation of the Iranian people have historically fostered a keen interest in precious and semi-precious stones. This study leverages Iran's rich heritage of gem collection and identification to explore the unique treasure of national jewelry. Employing micro-Raman spectroscopy—a non-destructive analytical technique that combines optical microscopy with Raman spectroscopy—this research aims to elucidate the structural properties of selected stone samples from the Bam historical citadel. Additionally, Energy Dispersive X-ray (EDX) analysis is utilized to assess the elemental composition of these materials. The investigation reveals that the analyzed beads are primarily composed of agate and jasper, both classified within the chalcedony group. The findings underscore the efficacy of micro-Raman spectroscopy in providing detailed insights into the structural characteristics of gemstones within a concise timeframe.

Keywords: Bam citadel, precious stones, semi-precious stones, Raman spectroscopy.

ISBN NR. : 978-625-6283-85-5

EVALUATING THE EFFICIENCY OF MICROENCAPSULATED PHASE CHANGE MATERIALS IN FOOD PRESERVATION

Dr. Amir Hossein Sharifi, Fatemeh Nazari, Prof. Dr. Mohammad Reza Jafari
University of Tehran, Department of Food Science and Technology, Iran

Abstract:
Temperature fluctuations during transportation and storage significantly impact the quality and shelf life of food products. Effective packaging is crucial for safeguarding food from adverse environmental conditions, particularly thermal variations. This study explores the efficacy of microencapsulated Phase Change Materials (PCM) as an innovative thermal insulation layer in smart food packaging solutions. The performance of the PCM insulation is assessed across various thicknesses, focusing on its ability to absorb heat from the surroundings. Results are quantified in terms of the PCM melting time and the corresponding thermal protection duration offered.

Keywords: Food preservation, phase change material, thermal insulation, packaging efficiency.

ISBN NR. : 978-625-6283-85-5

CO2 RECOVERY FROM FLUE GAS AND ITS CONVERSION TO METHANOL THROUGH A THREE-STEP PROCESS

Dr. Amir Hossein Zare, Prof. Dr. Fatemeh Rahimi, Dr. Mohammad Javad Alizadeh, Dr. Parisa Mohammadi
University of Tehran, Department of Chemical Engineering, Iran

Abstract:
Flue gas emitted from coal-fired and gas combustion power plants contains significant amounts of carbon dioxide (CO2), a greenhouse gas contributing to global warming. This study explores the Carbon Capture Storage and Utilization (CCSU) approach to mitigate CO2 emissions. The flue gas is captured from the chimney, filtered, and compressed to a pressure of 8 barg. The compressed flue gas undergoes a three-stage Pressure Swing Adsorption (PSA) process utilizing activated carbon, with optimal adsorption pressures observed at 7 barg. The CO2 concentrations achieved in each stage were 29.8%, 66.4%, and 96.7%, respectively. The final mixed gas, composed of 96.7% CO2, 2.7% N2, and 0.6% O2, is primed for methanol synthesis. Experiments conducted in a 5-liter methanol synthesis reactor reveal that varying the mixed CO2 and CH4 ratios of 70/30, 50/50, 30/70, and 10/90 produce methanol yields of 2.4, 4.3, 5.6, and 5.3 L/day, respectively, achieving CO2 savings of 40%, 30%, 15%, and 7%. The optimal mixed CO2/CH4 ratio of 47/53% by volume yielded 4.2 L/day of methanol, resulting in a 32% reduction in CO2 emissions compared to traditional methane steam reforming methods, which produce 5 L/day without CO2 utilization.

Keywords: Carbon capture storage and utilization, pressure swing adsorption, reforming, methanol.

ISBN NR. : 978-625-6283-85-5

DEVELOPMENT OF ECO-FRIENDLY WOOD ADHESIVES USING MIMOSA TANNIN AND CORNSTARCH

Dr. Ahmad Reza Shams, Prof. Dr. Leyla Moradi, Fatemeh Jafari
University of Tehran, Department of Wood Science and Technology, Iran

Abstract:
Currently, the predominant use of formaldehyde-based adhesives such as urea formaldehyde (UF) and melamine formaldehyde (MF) in the wood-based panel industry poses environmental challenges due to their derivation from non-renewable resources. This has led to an increasing demand for eco-friendly, bio-based wood adhesives that meet the industry's requirements while being economically competitive. This study presents the synthesis of a formaldehyde-free adhesive formulated from tannin and cornstarch, utilizing citric acid and tartaric acid as hardeners for the resin system. Comprehensive analyses, including solid content, viscosity, and gel time, were conducted to assess the processability of the adhesive. The chemical structures of the cured adhesive samples were characterized using FTIR techniques. To evaluate the performance of the synthesized bio-based resin formulation, particleboards were produced on a laboratory scale, and their mechanical and physical properties were thoroughly examined. Additionally, the formaldehyde content in the boards was determined using the perforator method. The findings indicate that the developed bio-based wood adhesive formulation holds significant promise as a viable alternative in the wood-based panel industry, contingent upon further enhancements.

Keywords: Wood adhesive, cornstarch, mimosa tannin, particleboard.

ISBN NR. : 978-625-6283-85-5

MECHANICAL CHARACTERIZATION OF DATE PALM FLOUR AND BIOPOLYPROPYLENE COMPOSITES COMPATIBILIZED WITH PP-G-IA

Dr. Ali Rezaei, Prof. Dr. Fatemeh Mohammadi, Dr. Amir Hossein Ghasemi, Prof. Dr. Mohammad Javad Sadeghi
University of Tehran, Department of Polymer Engineering, Iran

Abstract:
This study investigates the development of wood plastic composites utilizing biopolypropylene (BioPP) and date palm flour (DPF) through extrusion and injection molding techniques. To enhance compatibility, PP-g-IA and dicumyl peroxide (DCP) were employed as a compatibilizer and free radical initiator for reactive extrusion, respectively. The mechanical and morphological properties of the composites were evaluated to assess blend compatibility. Results indicate that the incorporation of DCP and PP-g-IA significantly improved the stiffness of BioPP, reflected in increased elastic modulus. Additionally, these additives enhanced the tensile strength and elongation at break compared to samples composed solely of BioPP and DPF, indicating better affinity between the two components. The synergistic effect of DCP and PP-g-IA was confirmed by Field Emission Scanning Electron Microscopy (FESEM), which revealed improved adhesion of DPF particles to the polymer matrix when both compatibilizers were present. This interaction was particularly pronounced, showing minimal gaps between DPF particles and the BioPP matrix.

Keywords: Biopolypropylene, compatibilization, date palm flour, wood plastic composit

ISBN NR. : 978-625-6283-85-5

DEVELOPMENT AND CHARACTERIZATION OF A HIGH-EFFICIENCY HONEYCOMB CERAMIC HEATER WITH CONDUCTIVE COATING

Dr. Amir Hossein, Prof. Dr. Fatemeh Jafari, Ali Rezaei, Dr. Sara Mohammadi

University of Tehran, Department of Materials Engineering, Iran

Abstract:
Porous electric heaters offer superior heating performance compared to conventional electric heaters due to their increased specific surface area. Utilizing either porous metallic materials or conductive porous ceramics, these heaters can enhance thermal efficiency. While metallic options achieve low heating power through their low electrical resistivity, the complexity and cost associated with manufacturing conductive porous ceramics present challenges. This study introduces a honeycomb ceramic electric heater that employs a dielectric ceramic substrate paired with a surface conductive coating as the heating element. The conductive coating is synthesized using the sol-gel method, integrating silica sol, methyl trimethoxysilane, and graphite powder as conductive fillers. Through electrical resistivity and thermal stability analyses, we investigate the conductive mechanisms and degradation processes of the coating. The experimental heating performance is evaluated using both air and deionized water as working media. Findings reveal that the conductive network formed by the contact of graphite flakes enables efficient electron transfer, achieving a minimal electrical resistivity of 0.88 Ω·cm with 30 wt% graphite content. The coating maintains good electrical stability up to 500 °C but deteriorates beyond 600 °C due to crack formation from thermal expansion and weight loss. Additionally, the working medium significantly influences the heater's volume power density, reaching 640.85 kW/m³ when using air under natural convection, and increasing fivefold with deionized water. This honeycomb ceramic electric heater showcases a straightforward fabrication process, cost-effectiveness, and high-volume power density, highlighting its potential in fluid heating applications.

Keywords: Conductive coating, honeycomb ceramic heater, thermal efficiency, volume power

ISBN NR. : 978-625-6283-85-5

DURABILITY ASSESSMENT OF RECYCLED POLYPROPYLENE COMPOSITES REINFORCED WITH FLAX FIBERS

Dr. Emma Jensen, Prof. Dr. Lukas Schmidt, Dr. Claudia Müller, Prof. Dr. Erik Van den Broeck
Department of Materials Science, University of Leuven, Belgium

Abstract:
In recent years, the increasing global environmental consciousness, driven by resource depletion and climate change, has led to the innovation of eco-friendly products, including biocomposites reinforced with natural fibers. A significant hurdle in the application of biocomposites for outdoor use is the limited understanding of their long-term durability and the changes in their mechanical and physicochemical properties over time. This study investigates the photooxidation effects on unidirectional (UD) flax fiber-reinforced composites with a recycled polypropylene matrix. The composites were prepared via thermocompression and subjected to an accelerated aging test utilizing a xenon arc WeatherOmeter. The findings detail the impact of UV exposure on the chemical composition and surface morphology of the composites, as well as their tensile mechanical properties. Results indicate that while accelerated aging substantially affects the surface characteristics of the composites, it has a minimal effect on their mechanical integrity.

Keywords: Flax fiber, photooxidation, durability, recycled polypropylene, mechanical properties.

ISBN NR. : 978-625-6283-85-5

GALACTOSE-MODIFIED ZINC OXIDE NANOPARTICLES: A NOVEL APPROACH TO DRUG DELIVERY WITH REDUCED ZINC ION RELEASE

Dr. Elena Novak, Prof. Dr. Tomasz Kowalski, Dr. Anna Malinowska
University of Warsaw, Department of Materials Science, Poland

Abstract:
The potential toxicity associated with the use of unmodified zinc oxide nanoparticles as drug carriers is primarily linked to the release of zinc ions. In this study, we synthesized zinc oxide nanoparticles modified with galactose using a microwave-assisted method. The physicochemical characteristics of the synthesized nanoparticles were thoroughly analyzed. The size and zeta potential were measured using dynamic light scattering, while X-ray diffractometry was employed to evaluate the crystalline structure. Fourier-transform infrared spectroscopy was utilized to confirm the successful modification of the nanoparticles. A comparative analysis of zinc ion release from the modified nanoparticles versus bare zinc oxide was conducted. Results indicated that galactose modification significantly reduces the release of zinc ions, thereby mitigating the toxic effects associated with the drug-carrier conjugate.

Keywords: Nanomaterials, zinc oxide, drug delivery system, toxicity.

ISBN NR. : 978-625-6283-85-5

UTILIZATION OF ORGANIC SEMICONDUCTOR MATERIALS IN THE DEVELOPMENT OF FLEXIBLE PHOTOVOLTAIC DEVICES

Dr. Elena Petrova, Prof. Dr. Marco Rossi, Dr. Anna Müller
University of Milan, Department of Materials Science, Italy

Abstract:
The quest for sustainable energy generation has led to significant advancements in solar cell technology, with a focus on minimizing the environmental impact of traditional inorganic semiconductor production. This study investigates the application of organic semiconductors, specifically using allene compounds C24H26O4 and C24H26O5 as dopants in the fabrication of semiconductor films based on PbPc via high-vacuum evaporation. Infrared (IR) spectroscopy was utilized to assess the phase behavior and any notable chemical transformations occurring during the thermal evaporation process. The analysis through UV-visible spectroscopy and Tauc's model indicated that the thin films achieved activation energy values ranging from 1.47 eV to 1.55 eV for direct transitions and 1.29 eV to 1.33 eV for indirect transitions, classifying them as low bandgap semiconductors. Flexible photovoltaic devices were constructed using polyethylene terephthalate (PET) and Indium tin oxide (ITO) layered with the organic semiconductor. Characterization involved measuring electrical conductivity through the four-probe collinear method, and I-V curves were analyzed under various lighting conditions at room temperature. The OS1 (PbPc/C24H26O4) device exhibited Ohmic behavior, while OS2 (PbPc/C24H26O5) demonstrated superior current outputs at lower voltage levels. These findings highlight the potential of allene-doped semiconductor devices for future optoelectronic applications.

Keywords: Organic semiconductors, photovoltaic devices, electrical properties, thin films.

ISBN NR. : 978-625-6283-85-5

IMPACT OF COMMONLY CONSUMED ACIDIC BEVERAGES ON THE SURFACE INTEGRITY OF ORTHODONTIC COMPOSITE MATERIALS

Dr. Elena Petrov, Prof. Dr. Marco Rossi

Department of Dentistry, University of Milan, Italy

Abstract:
Orthodontic composite materials play a crucial role in direct tooth restorations and aesthetic dental procedures, addressing a variety of dental challenges and enhancing patients' smiles. This study investigates the influence of pH levels on the surface integrity of a nanohybrid composite material commonly used in orthodontics. Five types of widely consumed acidic beverages, with pH values ranging from 3 to 6, were selected to evaluate their effects on the composite material's surface. The specimens were subjected to prolonged immersion in these beverages to simulate extreme exposure conditions. Using scanning electron microscopy (SEM) at various magnifications, we analyzed the morphological changes in the nanohybrid composite discs. The results indicated the presence of pores, cracks, protrusions, and increased surface roughness across all specimens due to beverage exposure. Although all samples exhibited alterations, no direct correlation was found between the pH levels and the extent of surface damage.

Keywords: Acidity, beverages, surface structure, orthodontics, SEM.

ISBN NR. : 978-625-6283-85-5

ENHANCEMENT OF SILICON SOLAR CELL PERFORMANCE THROUGH OPTIMIZED ANTI-REFLECTIVE COATINGS

Dr. Emilia Novak, Prof. Dr. Lukas Müller, Janek Petrov

University of Technology, Department of Renewable Energy, Germany

Abstract:
This research investigates the modeling and performance analysis of silicon solar cells enhanced by the application of anti-reflective coatings (ARC). Utilizing MATLAB 2022, the study evaluates the dynamic optical reflectance and transmittance, alongside the net transmissivity-absorptivity product, considering diurnal variations in the angle of incidence. Various ARC materials are tested, with performance benchmarks established against uncoated silicon cells. Notably, MgF2-coated silicon cells exhibit a remarkable optical transmittance of approximately 96.57% and the lowest reflectance at about 1.74% at noon. The electrical efficiency of the optimized solar cells is assessed under a composite climate scenario of Berlin, Germany, accounting for varying weather conditions. Annual electricity generation for anti-reflective coated crystalline silicon PV modules was calculated at 105.45 KWh, compared to 98.76 KWh for uncoated counterparts.

Keywords: Anti-reflective coating, electrical efficiency, silicon solar cell, optical properties, transmittance.

ISBN NR. : 978-625-6283-85-5

INNOVATIONS IN CARBON MATERIALS FOR SUSTAINABLE ENERGY SOLUTIONS

Dr. Elena Novak, Prof. Dr. Antonij Petrov,
University of Belgrade, Faculty of Chemistry, Serbia

Abstract:
The increasing utilization of carbon materials in the electrochemical industry is driven by their remarkable properties, which include a high specific surface area, significant porosity, and excellent adsorption capabilities. These characteristics facilitate their effective application in supercapacitors capable of storing electric charges up to 100 F when used as electrode materials. Various carbon forms, such as activated carbon, carbon black, and graphite, play a crucial role in electrochemical processes aimed at the remediation of oil pollutants in water, demonstrating their efficacy in the anodic oxidation of phenolic compounds. Carbon's ability to adsorb phenols effectively cleans water from hydrophobic impurities, and its electrodes can be easily regenerated through electrochemical methods that restore pore accessibility. Furthermore, graphite serves as a primary anode material in lithium-ion batteries; however, due to its limited capacity (372 mAh g-1), there is a growing interest in exploring sustainable alternatives, including biodegradable and biomass-derived materials. Common sources include agricultural by-products like wheat and rice waste, which are treated for optimal application in energy storage solutions. Starch, a biodegradable polysaccharide, is of particular interest due to its structural properties. Additionally, carbon's catalytic potential is being harnessed through nano-structured forms, enhancing its application in various catalytic processes. While numerous studies highlight the catalytic properties of carbon, a systematic approach that integrates structural and functional insights is necessary to advance this field. Understanding the interplay between carbon's environmental characteristics, conductivity, and structural integrity will be crucial for developing innovative carbon-based materials for sustainable energy applications.

Keywords: carbon materials, electrochemistry, sustainability, supercapacitors, lithium-ion batteries.

ISBN NR. : 978-625-6283-85-5

ENHANCING TENSILE STRENGTH AND DUCTILITY OF TANBHFZRTI REFRACTORY HIGH ENTROPY ALLOYS THROUGH REVERSE ROLLING

Dr. Elena Petrov, Prof. Dr. Marko Ivanovic, Dr. Anna Schmidt
Department of Materials Science, Technical University of Munich, Germany

Abstract:
Refractory high entropy alloys (RHEAs) are emerging materials suitable for high-temperature applications due to their capacity to maintain high strength up to 1600°C. However, their practical utility has been hampered by insufficient elongation at room temperature. This study explores a design strategy aimed at enhancing ductility by reducing average valence electron concentrations (VEC). The TaNbHfZrTi high entropy alloy was subjected to reverse rolling at room temperature, achieving a substantial 90% reduction in thickness. The reverse-rolled samples underwent annealing treatments at 800°C and 1000°C for 1 hour to investigate their phase stability, microstructure, texture, and mechanical properties. The 90% reverse-rolled condition exhibited a body-centered cubic (BCC) single-phase structure, while annealing at 800 °C resulted in the emergence of a secondary BCC-2 phase. Partial and complete recrystallization microstructures were observed in samples annealed at 800°C and 1000°C, respectively. Notably, both the reverse-rolled and 1000°C annealed samples demonstrated exceptional room temperature tensile properties, achieving high ultimate tensile strength (UTS) without compromising ductility, reflecting a favorable “strength-ductility” trade-off. The reverse-rolled samples subjected to 1000°C annealing exhibited a UTS of 1430 MPa and 1556 MPa, with elongations of 21% and 20%, respectively. The formation of a hierarchical microstructure in the samples annealed at 1000°C facilitated the simultaneous enhancement of both tensile strength and elongation.

Keywords: Refractory high entropy alloys, reverse rolling, ductility, recrystallization, tensile strength.

ISBN NR. : 978-625-6283-85-5

ENHANCING PATIENT-CENTRIC HEALTHCARE THROUGH DIGITAL ENGAGEMENT STRATEGIES

Dr. Anna Müller, Prof. Dr. Lukas Schmidt, Dr. Sarah Weiss, and Dr. Peter Hoffmann
Department of Health Sciences, University of Berlin, Germany

Abstract:
Engaging patients effectively is crucial for delivering high-quality healthcare and is particularly important for individuals managing chronic conditions. The digital transformation has significantly expanded the opportunities for enhancing patient engagement in personal healthcare. Nevertheless, the full potential of these advancements has yet to be realized. This paper aims to bridge the gap between patient engagement theory and practical application by providing a comprehensive overview of contemporary tools and methods for patient engagement. A systematic literature review was conducted, identifying and categorizing 56 tools and methods based on the four core attributes of patient engagement: personalization, access, commitment, and therapeutic alliance. The findings are evaluated regarding their applicability within digital health frameworks, guided by the "computers are social actors" (CASA) paradigm. The study concludes that digital health initiatives can significantly foster patient engagement in practice and outlines a broad agenda for future research.

Keywords: Chronic conditions, digital health, patient-centered care, patient empowerment, patient engagement.

ISBN NR. : 978-625-6283-85-5

ASSESSING THE IMPACT OF LEADERSHIP STYLES ON HEALTHCARE PERFORMANCE IN TEACHING HOSPITALS: A STUDY IN JORDAN

Dr. Leila Al-Husaini, Prof. Dr. Ahmad Al-Masri, Dr. Sara Jaber

Faculty of Health Sciences, University of Jordan, Jordan

Abstract:
This study investigates the effects of transformational and transactional leadership styles on the performance of healthcare employees at the University Hospital in Amman, Jordan. A structured questionnaire was distributed among the participants, selected through a simple random sampling method, encompassing 350 healthcare professionals. Analysis of the results indicated that both transformational and transactional leadership styles positively influenced the performance of healthcare workers, while ambidextrous leadership showed a negative effect. Consequently, the management of public hospitals that adapt their leadership approaches will likely foster greater employee support, thereby enhancing organizational commitment and performance among healthcare staff. This transformation may lead to significant social implications, including a shift in the work culture and attitudes of medical personnel toward more patient-friendly interactions, ultimately promoting a harmonious relationship between healthcare providers and the community. The exploration of ambidextrous leadership and the application of nonparametric analysis contribute valuable insights to the existing leadership literature.

Keywords: Healthcare performance, leadership styles, transformational leadership, transactional leadership.

ISBN NR. : 978-625-6283-85-5

EARLY ANTENATAL CARE VISITS AMONG WOMEN OF REPRODUCTIVE AGE: A MULTILEVEL ANALYSIS IN JORDAN

Dr. Layla Al-Mansour, Prof. Dr. Ahmad Al-Sharif, Ms. Fatima Zaidan, Dr. Omar Nasser
University of Jordan, Department of Public Health, Jordan

Abstract:
Maternal mortality remains a significant public health issue in the Near East, particularly in Jordan. Timely prenatal care is essential to improve pregnancy outcomes and reduce maternal morbidity. Despite this, many pregnant women in developing regions initiate Antenatal Care (ANC) late. This study aims to assess the prevalence and predictors of early ANC visits among women of reproductive age in Jordan. Utilizing data from the 2017 Jordan Demographic and Health Survey (JDHS), the analysis included 7,500 eligible women. A multilevel logistic regression analysis was conducted using Stata software to identify predictors of early ANC visits. The results are presented as odds ratios (ORs) with 95% confidence intervals (CIs), with a significance threshold set at $p < 0.05$. The prevalence of early ANC visits was found to be 62.5% [95% CI: 60.1-64.9]. Notably, women aged 25-29 exhibited higher odds of early ANC visits [aOR = 1.55, 95% CI = 1.23-1.95] compared to those aged 15-19. Additionally, women with secondary education [aOR = 1.40, 95% CI = 1.18-1.67] and those covered by health insurance [aOR = 2.60, 95% CI = 1.60-4.20] were more likely to initiate early ANC. In contrast, women with multiple previous births [aOR = 0.45, 95% CI = 0.32-0.63] and those residing in rural areas [aOR = 0.55, 95% CI = 0.42-0.72] had significantly lower odds of early ANC visits. This study highlights a relatively high prevalence of early ANC among Jordanian women, influenced by age, education, health insurance coverage, parity, and geographic location. These findings should inform ANC policy development to enhance early care access, thereby reducing maternal and newborn mortality and aligning with World Health Organization recommendations for early ANC initiation.

Keywords: Antenatal care, Jordan, maternal health, public health, DHS.

ISBN NR. : 978-625-6283-85-5

OCCUPATIONAL HEALTH RISKS AMONG MEDICAL PERSONNEL AND CONTRIBUTING FACTORS IN PUBLIC HOSPITALS, BEIRUT-LEBANON

Dr. Layla Nasser, Prof. Dr. Omar El-Khoury, Dr. Sara Haddad

Lebanese University, Faculty of Public Health, Lebanon

Abstract:
Medical personnel in Lebanon encounter various occupational health risks, encompassing biological, physical, ergonomic, chemical, and psychosocial hazards. This study investigates the prevalence of these occupational health risks among healthcare workers in public hospitals in Beirut. Employing a descriptive cross-sectional design, the research selected 400 participants from a total of 5,200 healthcare workers using a multistage sampling method. The findings indicated that a significant proportion (62%) of participants were aged between 25-35 years, with 52% being male, 54% married, and 48% holding a diploma qualification; 67% had less than 5 years of experience. The results revealed a concerning prevalence of occupational risks (97%); ergonomic hazards (91%), biological hazards (85%), psychosocial hazards (84%), physical hazards (80%), and chemical hazards (70%). No statistically significant differences were found between demographic characteristics and the prevalence of these risks ($p > 0.05$). The study highlighted that occupational risks are prevalent among medical personnel, with sharp-related injuries being the most common biological hazard, and slip, trip, and fall incidents as the primary physical hazard. Ergonomic issues manifested as back pain during work, while chemical hazards included allergic reactions to medical glove powder. Psychosocial hazards involved experiences of verbal and physical abuse. In conclusion, the study underscores the need for increased awareness and training programs for healthcare workers to mitigate these occupational hazards.

Keywords: Healthcare personnel, occupational health risks, prevalence, contributing factors.

ISBN NR. : 978-625-6283-85-5

EXAMINING DENTAL MALPRACTICE IN COMPLIANCE WITH ETHICAL STANDARDS

Dr. Ahmed Al-Mansour, Dr. Layla Rahim, Prof. Dr. Nabil Farhat, Dr. Sara Khoury
Department of Dentistry, Lebanon

Abstract:
The dentist-patient relationship is distinctive in the realm of healthcare, as treatment is typically provided by a single practitioner, leading patients to attribute any malpractice directly to that dentist. This contrasts with medical fields where a team of professionals may address a patient's condition. The principles of dental ethics closely mirror those in medical ethics; however, dental malpractice predominantly impacts this two-party relationship, with implications that differ significantly from medical malpractice. Various factors contribute to the occurrence of malpractice, including professional negligence and insufficient knowledge of dental practices by the treating dentist. It is essential to recognize that most dentists do not intend to harm their patients. Malpractice may arise due to anatomical or physiological challenges that hinder the execution of an established treatment plan. Additionally, personal health issues or lifestyle factors affecting the dentist's well-being can inadvertently lead to malpractice. Legal approaches to addressing malpractice vary depending on its underlying causes, necessitating a careful examination of the ethical standards in practice. Deviations from treatment plans signify malpractice and should not be restricted solely to complex cases. Identifying the root causes of malpractice is crucial for developing appropriate legal responses and guiding the ongoing education of dental professionals. By incorporating malpractice discussions into training programs, practitioners can enhance their professional competencies and reduce the likelihood of recurrence.

Keywords: Dental malpractice, ethical standards, professional negligence, legal implications, dental education.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT OF KNOWLEDGE AMONG OPERATING ROOM PERSONNEL REGARDING FIRE PREVENTION AND CONTROL IN GOVERNMENT HOSPITALS IN BEIRUT, LEBANON

Dr. Khaled Al-Hariri, Dr. Layla Saad, Ms. Hanan Jamal, Dr. Omar Al-Mansoori
Faculty of Health Sciences, Lebanese University, Lebanon

Abstract:
Ensuring patient safety within hospitals is a critical professional benchmark, particularly concerning the risk posed by fires, which can severely endanger patients and staff. This study aims to evaluate the knowledge of operating room (OR) personnel regarding the sources, prevention, and control of fires. Data were collected from April 1 to April 30, 2023, through a descriptive cross-sectional study involving a sample of 95 OR staff from various government hospitals. Convenient sampling was utilized to determine the sample size, and official approvals were obtained from the selected hospitals prior to data collection. Knowledge was assessed using a close-ended questionnaire. The majority of participants were male, with 55% identifying as operation technicians. More than half of the OR staff had less than ten years of experience. The findings indicated that 90% of participants possessed inadequate knowledge of fire sources, while 75% lacked sufficient understanding of fire prevention and control measures. Only 25% demonstrated adequate knowledge of fire prevention strategies. The study underscores the urgent need for training programs focusing on fire safety awareness and prevention tailored to OR personnel in hospitals.

Keywords: Operating room staff, fire prevention, hospital safety.

ISBN NR. : 978-625-6283-85-5

INTERACTIVE DIGITAL LEARNING AND EMOTIONAL SUPPORT FOR CHILDREN WITH CHRONIC ILLNESSES

Dr. Zainab Al-Hakim, Prof. Dr. Rashid Al-Sabah, Noor Ahmed

American University of Sharjah, Department of Health Sciences, United Arab Emirates

Abstract:
Information technology has the potential to significantly enhance learning and entertainment experiences, especially for children facing long-term illnesses. This proposed online video game aims to provide immersive educational opportunities alongside essential social and emotional support for hospitalized children. The platform features self-paced online courses covering various school subjects, augmented by specialized software and multisensory assessments, promoting academic achievement and a sense of belonging. Interactive doctor mini-games educate young patients about their medical conditions, while online ethical dilemmas encourage contemplation about the significance of medical procedures and adherence to treatment plans. The game fosters reflection on their hospitalization experience and personal responsibility for recovery. Emotional and psychosocial needs are addressed through engaging social activities, including collaborative mini-games with peers, virtual sports competitions, group psychodrama sessions, and online celebrations. Children are also encouraged to interact with a virtual pet and a virtual nurse, promoting dialogue, emotional expression, and daily reflections. Access to the platform will be available throughout the day based on the patient's health status, with flexibility to support post-treatment care at home. This program aims to reduce feelings of isolation and escapism while enhancing the overall well-being of young patients.

Keywords: Hospitalized children, interactive gaming, chronic illness, cognitive development, emotional support.

ISBN NR. : 978-625-6283-85-5

ASSESSMENT OF COVID-19 POSITIVITY RATES AMONG HOSPITALIZED PATIENTS WITH VARYING VACCINATION STATUS: A STUDY FROM KING ABDULAZIZ MEDICAL CITY, SAUDI ARABIA

Dr. Ahmed Al-Mansoori, Dr. Fatima Al-Zahrani, Dr. Omar Al-Badawi, Dr. Layla Al-Hamadi, Dr. Saeed Al-Fahad

King Abdulaziz Medical City, Department of Infectious Diseases, Riyadh, Saudi Arabia

Abstract:
Amid the COVID-19 pandemic, Saudi Arabia has prioritized achieving herd immunity through comprehensive vaccination campaigns. This study evaluates the positivity rate of hospitalized patients under surveillance for COVID-19, comparing their vaccination status to national statistics to assess outcomes for those who tested positive. Conducted as a retrospective observational study from January 1 to March 30, 2022, at King Abdulaziz Medical City, the research included 4,890 patients. All admissions underwent pre-admission Polymerase Chain Reaction (PCR) testing, excluding those with positive results. Patients identified as Persons Under Surveillance (PUS) due to exposure to COVID-19-positive individuals were quarantined and monitored. Data on their frequency and exposure risks were collected per WHO guidelines. On the final day of quarantine, a follow-up PCR was conducted for symptomatic patients. Patients were categorized based on vaccination status: fully vaccinated, partially vaccinated, and unvaccinated. The positivity rate among PUS was analyzed alongside clinical outcomes. Among the 487 PUS patients, 12 tested positive, yielding a positivity rate of 2.5%. Of those, 7 (58.3%) experienced high-risk exposure. Vaccination status revealed that 5 (41.7%) were fully vaccinated, 4 (33.3%) received booster doses, and 3 (25%) were unvaccinated. Most patients (10/12, 83.3%) presented with mild symptoms (categories 1-2), while 16.7% were classified under higher severity categories (3-5). There was no significant correlation between vaccination status and disease severity (P = 0.712). One patient succumbed to complications related to COVID-19. The positivity rate at our facility (2.5%) remains markedly lower than the national average of 15.1%, underscoring the impact of exposure risks on infection rates, regardless of vaccination status.

Keywords: COVID-19, vaccination status, positivity rate, surveillance, Saudi Arabia.

ISBN NR. : 978-625-6283-85-5

ENHANCING ADVERSE EVENT REPORTING IN IMMUNIZATION: THE IMPACT OF MOBILE TECHNOLOGY IN LEBANON

Dr. Samir El-Hassan, Dr. Layla Kassem, Dr. Nabil Jreige, Ms. Rania Dabbous, Mr. Omar Khalil
Lebanese University, Faculty of Public Health, Lebanon

Abstract:
Vaccination plays a critical role in safeguarding public health worldwide, necessitating stringent quality control and monitoring to ensure safety. Despite the best efforts to manage vaccine administration, adverse events following immunization (AEFI) may occur, leading to underreporting, particularly in low-resource settings such as Lebanon. In response to the introduction of new vaccines, including the COVID-19 vaccine, this study explores the utilization of mobile technology to enhance AEFI surveillance. A cross-sectional analysis was conducted from January to June 2023, reviewing AEFI data across various regions of Lebanon over the preceding five years. Data were systematically analyzed using statistical software, revealing a significant gap in AEFI reporting prior to the implementation of mobile reporting tools. The introduction of a mobile application facilitated improved data capture, leading to a noticeable increase in reported cases—nearly doubling the previous rates. The AEFI incidence was reported at 2.5 and 145 per 100,000 doses administered for the COVID-19 vaccine, highlighting the efficacy of mobile technology in monitoring vaccine safety. This mobile platform not only streamlined data collection but also provided critical insights into the AEFI profile associated with new vaccines in Lebanon.

Keywords: Adverse events following immunization, mobile technology, Lebanon, COVID-19 vaccine.

ISBN NR. : 978-625-6283-85-5

DATA-DRIVEN INSIGHTS: ANALYZING MARKET DYNAMICS IN HEALTHCARE FACILITIES

Dr. Mei Lin, Prof. Dr. Kenji Takahashi, Dr. Haruto Nishida, Ms. Yumi Sato, Mr. Taro Yamamoto
University of Tokyo, Department of Healthcare Management, Japan

Abstract:
The demand for data-driven strategies in healthcare management is escalating rapidly. This study aims to develop a robust framework for identifying key factors that influence market share trends among healthcare facilities. By employing a machine learning regression model, we assist strategists in making informed decisions to enhance facility market share, ultimately improving healthcare service quality. The research focuses on the healthcare sector in Japan, utilizing data from 75 prominent facilities and approximately three years of historical records. Market share is defined as the ratio of a facility's encounters to the total encounters within a competitive group. Our methodology includes competitor identification and regression analysis to evaluate and predict market share. We employed SHAP (SHapley Additive exPlanations) to quantify the relative significance of features influencing market share. Unlike traditional empirical methods, our approach identifies a comprehensive list of competitors and constructs Directed Acyclic Graphs (DAGs) to analyze the relationships between various facilities. This data-driven technique minimizes biases commonly associated with empirical analyses. The DAGs incorporate partial correlations and key demographic information, allowing for the integration of various business rules. Our findings reveal distinct competitive groups among facilities and leverage a refined Random Forest Regression model to predict market share accurately. The permutation feature importance method highlights the primary drivers of market share, while SHAP offers a detailed ranking of attributes affecting each facility's market presence. This approach synthesizes effective machine learning techniques with graph-based models to support strategic business decisions.

Keywords: Market dynamics, healthcare management, machine learning, SHAP, market share, regression analysis, competition.

ISBN NR. : 978-625-6283-85-5