



PROGRAM BOOK

The 4th ISST 2024

The 4th International Seminar of Science and Technology 2024

Innovations in Science and Technology to Realize Sustainable Development Goals

Organized by the Faculty of Science and Technology,
Universitas Terbuka



ISST CHAIRMAN REMARKS

The 4th International Seminar of Science and Technology (The 4th ISST): “Innovations in Science and Technology to Realize Sustainable Development Goals”
Universitas Terbuka, October 17th, 2024



Our Honorable Keynote Speaker:

Prof. Dr. rer. nat. Abdul Haris, M.Sc as Director General of Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, Republic of Indonesia

Our Honorable Plenary Speakers:

1. Prof. Paul Burton from Griffith University, Australia
2. Dr. Yuri Bukhman from Morgridge Institute of Research in Madison, USA
3. Mr. George Xu from H3C, and
4. Dr. Pismia Sylvi from Universitas Terbuka, Indonesia.

Our Honorable:

1. Prof. Ojat Darajat, M.Bus., Ph.D., Rector of Universitas Terbuka
2. All Vice Rectors in Universitas Terbuka
3. Dean of the Faculty of Science and Technology and All of Heads of Units in Universitas Terbuka
4. All of my Dearest Colleagues in Universitas Terbuka: Professors and Lecture, and to all Presenters and Participants of ISST 2024, and to all students of Universitas Terbuka.

Bismillahirrahmanirahim

Assalamu'alaikum wa rahmatullahi wa barakatuh,

Om Swastiastu

Namo Budhaya

Salam Kebajikan

Good morning. Welcome to the 4th International Seminar on Science and Technology, or ISST.

As the chairman of today's seminar hosted by the Faculty of Science and Technology at Universitas Terbuka, I warmly welcome all our esteemed guests and participants. This event marks the fourth international seminar organized by our faculty, centered around the theme “Innovations in Science and Technology to Realize Sustainable Development Goals.”

We're excited to bring this event to life both in person at the Universitas Terbuka Convention Centre and online via Zoom and our YouTube channel. A heartfelt greeting to all our online participants as well! We owe immense gratitude to Universitas Terbuka, especially our Rector, along with all the partners and sponsors who made this event possible and our dedicated committee members. On behalf of the committee, I sincerely thank you all.

In alignment with our commitment to this global initiative, we've chosen the theme “Innovations in Science and Technology to Realize Sustainable Development Goals,” which is further divided into three engaging sub-topics: (1) Collaborative Contributions in Environmental Science to Achieve Sustainable living, (2) The Role of Agricultural Science in Sustainable Food Production, (3) Technological Innovations in Natural Science for Sustainable Environment.

Dear colleagues and guests,

This event promises a wealth of insightful discussions featuring our distinguished keynote and plenary speakers from the Ministry of Education, Culture, Research, and Technology, Griffith University, Morgridge Institute for Research, H3C, and, of course, Universitas Terbuka. We are thrilled to have over 250 participants joining us!

This afternoon, we will host parallel sessions featuring 117 presenters—46 presenting their scientific articles on-site and 71 online. The submitted and reviewed articles will be compiled in the Proceedings of the International Seminar of Science and Technology, 2024, with selected papers also set for publication in the IOP Proceedings indexed by Scopus.

To all our guests, we eagerly anticipate engaging in scientific discussions with our speakers, presenters, and participants. A special thank you goes to our dedicated committee and partners, particularly our sponsors—PT. My Icon Technology, H3C PT Huasan Teknologi Indonesia, and Ioni Jaya, and our partnership—Pos Indonesia, Gramedia Printing Group, Bank Mandiri, Bank BRI, Bank BTN, Bank BNI, and Bank BSI—for their hard work and commitment to making this event a success.

I wish everyone a fantastic experience and good health throughout the seminar!
Thank you,

Wassalamu'alaikum warahmatullahi wabarakatuh.

Tangerang Selatan, 17 October 2024

Chairman of ISST 2024,
Dr. Pepi Rospina, S.P., M.Si.

DEAN OF FACULTY OF SCIENCE AND TECHNOLOGY REMARKS

The 4th International Seminar of Science and Technology (The 4th ISST): “Innovations in Science and Technology to Realize Sustainable Development Goals”
 Universitas Terbuka, October 17th, 2024

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- All Vice-Rectors, Deans, Director of Post Graduate School, Head of Research and Community Services Institute, and all Heads of Units in Universitas Terbuka
- Felloe Deans of partners Universities
- All sponsors representatif
- All of my Dearest Colleagues in Universitas Terbuka: Professors and Lecturers
- Presenters and participants of ISST 2024, and to all students of Universitas Terbuka

Bismillahirrahmanirahim

Assalamu'alaikum wa rahmatullahi wa barakatuh,

Om Swastiastu

Namo Budhaya

Salam Kebajikan

Good morning, everyone. I am pleased to welcome you all to the 4th International Seminar of Science and Technology, organized by the Faculty of Science and Technology Universitas Terbuka.

Today, I want to extend my heartfelt thanks to our esteemed Keynote Speakers, Plenary Speakers, Presenters, and everyone participating in our seminar. We have gathered to dive into a topic of immense importance in our fast-changing world: **"Innovations in Science and Technology to Realize Sustainable Development Goals"**.

This theme resonates profoundly as we confront urgent global challenges like climate change, inequality, poverty, and environmental degradation. The Sustainable Development Goals (SDGs) are our shared roadmap to tackle these issues, striving for a world that is not only sustainable but also equitable and prosperous for everyone.

At the core of this mission lie science and technology. The innovations emerging from these fields have the potential to reshape our societies, elevate communities out of poverty, enhance health and education, stimulate sustainable economic growth, and safeguard our planet for generations to come. Yet, harnessing

the full power of science and technology to fulfil the SDGs demands more than mere technical progress; it requires collaboration, creativity, and a united dedication to the common good.

At Universitas Terbuka, we take pride in being part of this global initiative. Our commitment is to nurture a culture of innovation, promote interdisciplinary research, and forge robust partnerships with institutions both within Indonesia and around the globe. This seminar embodies that commitment, offering a vibrant platform for researchers, academics, practitioners, and policymakers to come together, share their insights, and explore new avenues for leveraging science and technology to pursue sustainable development.

This event is a fantastic opportunity for all of us—researchers, professionals, and enthusiasts alike—to engage in meaningful discussions, exchange knowledge, and cultivate collaborations. Through gatherings like this, we can work toward creating a brighter, more sustainable future for the generations to come.

I hope all our Speakers, Presenters, and Participants enjoy this seminar to the fullest. Thank you to the committee and our sponsors for their invaluable support. I am confident that the contributions we make today will pave the way for a more sustainable and thriving world!

Thank you,

Wassalamu'alaikum Wr. Wb.
Tangerang Selatan, 17 Oktober 2024

Dean of Science and Technology Faculty
Dr. Subekti Nurmawati, M.Si.

RECTOR REMARKS

**The 4th International Seminar of Science and Technology (The 4th ISST): “Innovations in Science and Technology to Realize Sustainable Development Goals”
Universitas Terbuka, October 17th, 2024**



Bismillahirrahmanirahim
Assalamu'alaikum wa rahmatullahi wa barakatuh,
Om Swastiastu
Namo Budhaya
Salam kebajikan

Honourable Keynote Speaker:

Prof. Dr. rer. nat. Abdul Haris, M.Sc as Director General of Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, Republic of Indonesia

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3. **Mr. George Xu** from H3C, and
4. **Dr. Pismia Sylvi** from Universitas Terbuka, Indonesia.

Respected Colleagues,

Honorable Chairman of Academic Senate, Universitas Terbuka;
Honorable Vice-Rectors of Universitas Terbuka;
Honorable Chairman of Board of Professor, Universitas Terbuka;
Honorable Dean of Faculty of Science and Technology, Universitas Terbuka;
Honorable Unit Heads, lecturers, and all presenters and participants of the 4th ISST.

I am honoured and privileged to welcome you all to the 4th International Seminar of Sciences and Technology (ISST) 2024. This year's seminar carries special significance as it coincides with the 40th Anniversary of Universitas Terbuka. Over the past four decades, Universitas Terbuka has been dedicated to providing quality education to learners across Indonesia and beyond, and this seminar is a mark of our ongoing commitment to advancing knowledge and innovation in science and technology.

The theme of this year's seminar is “Innovations in Science and Technology to Realize Sustainable Development Goals”. This theme is both timely and essential, as we live in an era where the challenges we face as a global community, such as climate change, inequality, poverty, and environmental degradation, demand urgent and innovative solutions. The Sustainable Development Goals (SDGs) serve as our collective blueprint for addressing these challenges and creating a more sustainable, equitable, and prosperous world for all.

Science and technology are at the heart of this endeavor. Innovations in these fields can transform our societies, lift people out of poverty, improve health and education, promote sustainable economic growth, and protect our planet for future generations. However, realizing the full potential of science and technology to achieve the SDGs requires more than just technical advancements; it requires collaboration, creativity, and a shared commitment to the common good.

At Universitas Terbuka, we are proud to be part of this global effort. Our mission is to foster a culture of innovation, encourage interdisciplinary research, and build strong partnerships with other institutions within Indonesia and internationally. This seminar is an integral part of that mission. It provides a platform for researchers, academics, practitioners, and policymakers to come together, share their insights and experiences, and explore new ways of harnessing science and technology for sustainable development.

Today, we are fortunate to have a diverse and distinguished group of speakers and participants who bring a wealth of knowledge and expertise to this seminar. I am confident that the discussions we will have today, and the ideas that will be exchanged, will inspire new thinking and lead to innovative solutions that will make a real difference in the world.

As we begin our seminar, I would like to take a moment to thank the Faculty of Science and Technology for their hard work and dedication in organizing this seminar. I would also like to extend my gratitude to our keynote speakers, plenary speakers, and all the participants who have travelled from near and far to be with us today. Your presence here demonstrates the importance of this seminar and the shared commitment we all have to advance science and technology for the betterment of society. I would also like to thank all sponsors of the 4th ISST: PT. My Icon Technology, PT. Huasan Technology, PT. Ioni Jaya, Bank Tabungan Negara, Bank Rakyat Indonesia, Bank Mandiri, Bank Syariah Indonesia, Bank Negara Indonesia, PT. Gramedia Printing group, PT. Pos Indonesia, PT. Royal Express Indonesia, and ID Express Logistik Indonesia have supported this event's success.

Lastly, I encourage all of you to take full advantage of this opportunity to engage with one another, share your ideas, and explore new avenues for collaboration. The challenges we face are complex and multifaceted, but by working together, by pooling our knowledge and resources, we can make significant strides towards achieving the Sustainable Development Goals.

Let us embark on today's discussions with a spirit of openness, curiosity, and determination. I wish you all a productive and inspiring seminar.

Wassalamu'alaikum warahmatullahi wabarakatuh.

Tangerang Selatan, 17 October 2024

Rector of Universitas Terbuka
Prof. Ojat Darajat, M.Bus. Ph.D

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SEMINAR RUNDOWN

The 4th ISST 2024
UNIVERSITAS TERBUKA
“Innovations in Science and Technology to Realize Sustainable Development Goals”
Thursday, 17th October 2024
<http://isst.fst.ut.ac.id>

No	Details	Time (UTC+7; WIB)
1	Registration for Offline and Online Presenters and Participants: Zoom : https://sl.ut.ac.id/4thISST_event Youtube : https://sl.ut.ac.id/4thISST_event_utv	07.30 – 08.30
2	Opening Ceremony	08.30 – 08.45
3	Opening prayer	08.45 – 08.50
4	Art Performance: Kendang Reog Gung Traditional Dance	08.50 - 09.00
Welcome Speech		
5	Report by Conference Chair Dr. Pepi Rospina Pertiwi	09.00 – 09.05
6	Welcome Speech by Dean of the Faculty of Science and Technology, Universitas Terbuka Dr. Subekti Nurmawati, M.Si.	09.05 – 09.10
7	Opening Remarks by Rector of Universitas Terbuka Prof. Ojat Darajat, M.Bus., Ph.D.	09.10 – 09.17
8	Opening Ceremony using “Gong”	09.17 – 09.30
Keynote Speech		
9	Keynote Speaker: Prof. Dr. rer. nat. Abdul Haris, M.Sc Directorate General of Higher Education, Research, and Technology Ministry of Education, Culture, Research, and Technology, Republic of Indonesia	09.30 – 09.50
10	Faculty of Science and Technology’s Scientific Work Video Launching	09.50 – 10.00
11	Plenary Session 1 Moderator: Fawzy Rahmadiyan M.Sc	
	Dr. Pysmia Sylvi (Universitas Terbuka, Indonesia) - luring	10.00 – 10.20
	Dr. Yuri Bukhman (Bioinformatics, USA) - daring	10.20 – 10.40
	QnA Session	10.40 – 11.00
12	Plenary Session 2 Moderator: Erika Pradana Putri M.Sc	
	Mr George Xu (PT Huasan Technology Indonesia)	11.00 – 11.20
	Prof Paul Burton (Griffith University, Australia)	11.20 – 11.40

No	Details	Time (UTC+7; WIB)
	QnA Session	11.40 – 12.00
18	Closing of Plenary Session	12.00 – 12.15
19	Lunch and prayer	12.15 – 13.30
20	Parallel Session	13.30 – 15.30
21	Closing ceremony	15.30 – 16.30

KEYNOTE SPEAKER







Prof. Dr. rer. nat. Abdul Haris, M.Sc

Prof. Dr. rer. nat. Abdul Haris, M.Si. was born on September 21, 1970. He was appointed as the Director General of Higher Education, Research, and Technology. by the Minister of Education, Culture, Research, and Technology, Nadiem Makarim on March 15, 2024. He is also a professor in the field of geophysics at the Faculty of Mathematics and Natural Sciences, University of Indonesia. Abdul Haris studied physics at the University of Indonesia and graduated in 1992. He obtained a master's degree in physics from the same university in 1995. Abdul Haris began his doctoral studies in geophysics at Kiel University, Germany in 1999.

Source: [https://id.wikipedia.org/wiki/Abdul_Haris_\(akademisi\)](https://id.wikipedia.org/wiki/Abdul_Haris_(akademisi))

PLENARY SPEAKERS

 	<p>Prof. Paul Burton Urban Management and Planning, Griffith University</p> <p>He trained as a planner at the Polytechnic of the South Bank in London, graduating in 1979 with a Bachelor of Town Planning with Honours. He served as Dean of Undergraduate Studies in the Faculty of Social Sciences and then took on the role of Head of the School for Policy Studies. In 2007 I moved to Australia to take up a Chair in Urban Planning and Management at Griffith University. He became Deputy Director/Acting Director of Griffith's Urban Research Program and inaugural Director of the Cities Research Centre and then the Cities Research Institute in 2017. He also served as Acting Director of the Griffith Climate Change Response Program in 2012/13. He has been an active member of a range of professional and community organisations in the UK and in Australia and served for ten years on the National Education Committee of the Planning Institute of Australia and currently on the Divisional Committee of the Queensland Division of PIA. He is also a member of the Ambassador Program of Destination Gold Coast.</p> <p>Source: https://experts.griffith.edu.au/18934-paul-burton</p>
 	<p>Dr. Yuri Bukhman Computational Biologist, Morgridge Institute of Research in Madison, USA</p> <p>He is an experienced bioinformatician. He likes working on a variety of problems in high-throughput biological data analysis and integration. He is also interested in computer programming and data management. His current project is blue whale genome assembly and annotation. He graduated doctoral studies (Ph.D.) at Johns Hopkins University, Baltimore, MD, USA, in 1998 and he also graduated from Diploma (5-years) at Moscow State University, Russia in 1992.</p> <p>Source: https://morgridge.org/profile/yury-bukhman/</p>

 	<p>George Xu H3c Indonesia</p> <p>George Xu is currently the Managing Director of H3C Indonesia, overseeing the company's business in the country. Prior to this role, George held various positions at Huawei, including Principal Solution Architect for the APAC Region and Director of the Carrier Sector in Australia. George also worked as a Principal Network Architect at Optus and held multiple positions at Huawei, including Deputy Director, Product Manager of IP products, and Solutions architect. George graduated with a Bachelor of Science in Telecommunication Science from Nankai University.</p> <p>Source: https://theorg.com/org/h3c-technologies/org-chart/george-xu</p>
 	<p>Dr. Pismia Sylvi, S.Si., M.Si.</p> <p>Mrs. Pismia Sylvi, S.Si., M.Si. as a Learning and Examination Manager in UT Surabaya. She is a lecturer in the Statistics study program, Faculty of Science and Technology, Universitas Terbuka. Pismia Sylvi completed her undergraduate, master's and doctoral education in the statistics study program at Institut Teknologi Sepuluh Nopember (ITS).</p> <p>Source: https://id.linkedin.com/in/pismia</p>

OFFLINE PRESENTATION SCHEDULE

ROOM A

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable living (Biodiversity, Nature Conservation, Management of Natural Resources and Environment)

Moderator : Dr. Elizabeth Novi Kusumaningrum, S.Si., M.Si.

ROOM Manager : Diki, S.Si., M.Ed., Ph.D.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30118	Amirah Hurzaid	Universiti Sains Malaysia	DNA Barcoding and Biodiversity of Commercially Important Fishes (Actinopterygii) from Middle Bank, Penang, Malaysia: A First Report
2	13.45 - 14.00	30103	Sultan Ahmad Dzakwan	Universitas Terbuka	Morphometric study of green peacock feather as material for dadhak merak of Reog Ponorogo
3	14.00 - 14.15	30303	Arie Aryanto	Universitas Terbuka	Improving the Quality of Solid Organic Fertilizer Using Decomposer
4	14.15 - 14.30	30120	Diki	Universitas Terbuka	Eel conservation and local wisdom in Ambon
5	14.30 - 14.45	30116	Diki	Universitas Terbuka	Convolutional Neural Network for Plant leaves identification
6	14.45 - 15.00	30119	Diki	Universitas Terbuka	Molecular biological aspect of Papua crayfish
7	15.00 - 15.15	30205	Elizabeth Novi	Universitas Terbuka	Exploring the attitudes of Solor Island fishermen in East Nusa Tenggara for concerning their orientations to blue whales conservation

ROOM B

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Management of Natural Resources and Environment, Regional and Environmental Planning, Environmental Health and Pollution)

Moderator : Shinta Permana Putri, S.T., M.P.W.K.

ROOM Manager : Siti Umamah Naili Muna, M.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30305	Lis M.Yapanto	Universitas Terbuka	Water Resource Management Model for The Economic Strength Of Coastal Communities
2	13.45 - 14.00	30402	Lintang Rahmayana	Universitas Terbuka	The challenges of land conversion in realizing a livable city, case study: Depok City
3	14.00 - 14.15	30403	Khoirina Fajriani	Universitas Terbuka	The Role of Social Groups in Environmental for the Sustainability of Community Life in the Small Islands of Banda Neira
4	14.15 - 14.30	30404	Vita Elysia	Universitas Terbuka	The Conversion of Productive Agricultural Land and the Growth of Developed Land in Ciampea District, Bogor Regency
5	14.30 - 14.45	30505	Aliefi Mutiara Syafitri	Universitas terbuka	Characterization and Application of Distillation Waste from Kjeldahl Protein Testing as a Liquid Medium for Air Pollution Control
6	14.45 - 15.00	30508	Aanisah Aprilia Lasampa	Universitas Darussalam Gontor	Collaboration of the Jakarta Sadar Sampah Programme in waste management as a sustainable environmental development in Jakarta
7	15.00 - 15.15	30302	Fazillah Nurthayyibah	Universitas Terbuka	Utilization Of Tofu Waste as A Cattle Feed

ROOM C

- Subtheme : Role of Agriculture Science for Sustainable Food Production (Sustainable Agribusiness and Supply Chain, Food Regulation and Policies for Sustainability)
- Moderator : Dr. Ir. Tuty Maria Wardiny, M.Si.
- ROOM Manager : Bayu Eka Wicaksana, M.P.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	20419	Adi Surya Panji Gumilang	Universitas Pakuan	Financial feasibility analysis of black soldier fly (<i>Hermetia illucens</i>) cultivation business in Bogor, West Java
2	13.45 - 14.00	20407	Mareta Gangsar Wilistanti	Universitas Pakuan	Analysis of Cayenne Pepper and Kenyan Chickpea Intercropping Farming at Gapoktan Wargi Panggupay, Suntenjaya Village, Lembang
3	14.00 - 14.15	20414	Ismail Hasvi	Universitas Terbuka	Analyzed of Formal Credit Acces in Financial Technology Utilization of Chilli Farmers in Sukabumi Regency (A case in PT. Crowde)
4	14.15 - 14.30	20415	Mochammad Yunus Gerry Fitriadi	Universitas Terbuka	Title: The Influence of Lifestyle, Price, and Quality on the Interest in Purchasing Organic Vegetables on the Kecipir Application
5	14.30 - 14.45	20301	Faujatul Hasanah	Universitas Terbuka	The Effect of Strategic Food Commodity Prices on Inflation in DKI Jakarta Province
6	14.45 - 15.00	20416	Bayu Eka Wicaksana	Universitas Terbuka	Analysis of Trade Integration and Export Performance of Indonesian Tobacco Commodities In The Global Market (HS Codes: 2401.10, 2401.20, & 2401.30)

ROOM D

- Subtheme : Role of Agriculture Science for Sustainable Food Production (Sustainable Agribusiness and Supply Chain, Fisheries Management and Sustainability, Functional Food for Health and Sustainability)
- Moderator : Ir. Endang Indrawati, M.A.
- ROOM Manager : Dr. Pepi Rospina Pertiwi, S.P., M.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	20405	Idha Farida	Universitas Terbuka	Competence of Agricultural Extension Assistant Worker
2	13.45 - 14.00	20412	Idha Farida	Universitas Terbuka	Utilization Of Smart Farming Technology Based On Urban Farming In Malang City
3	14.00 - 14.15	20417	Idha Farida	Universitas Terbuka	The Level Of Farmers's Knowledge About The Utilization Of Biosaka In Suka Agung Village, Buay Bahuga District, Way Kanan Regency
4	14.15 - 14.30	20503	Ernik Yuliana	Universitas Terbuka	Dynamics Of Fish Production From Landed Catches At The Labuan Fishing Port
5	14.30 - 14.45	20505	Ernik Yuliana	Universitas Terbuka	Biological Aspects Of <i>Cherax quadricarinatus</i> For Early Detection Efforts And Rapid Response Of Invasive Alien Species (Case In West Java)
6	14.45 - 15.00	20504	Farikhah	Universitas Muhammadiyah Gresik	Title: The Gonadal Study of Green Mussel <i>Perna viridis</i> from The Java Sea in Gresik Regency
7	15.00 - 15.15	20418	Pepi Rospina Pertiwi	Universitas Terbuka	Sustainability of Ornamental Plant Farming in Achieving Sustainable Development Goals
8	15.15 - 15.30	20107	Endang Indrawati	Universitas Terbuka	Prospects of gedi leaves (<i>Abelmoschus manihot</i> L.) as alternative feed ingredients to produce functional green livestock products

ROOM E

Subtheme : Role of Agriculture Science for Sustainable Food Production (Green Food Production and Packaging, Food Regulation and Policies for Sustainability)

Moderator : Adhi Susilo, S.Pt., M.Biotech.St., Ph.D.

ROOM Manager : Mutiara Ulfah, S.T.P., M.Sc.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	20105	Lula Nadia	Universitas Terbuka	Effect of Freeze and Hot-Air Drying Method on Chemical Composition of Yam Flour
2	13.45 - 14.00	20108	Mutiara Ulfah	Universitas Terbuka	A Bibliometric Analysis of Indonesian Fermented Fish
3	14.00 - 14.15	20204	Mutiara Amalina Khairisa	Universitas Terbuka	The Potential of Pineapple Waste and Proteolytic Content to Enhance Added Value
4	14.15 - 14.30	20205	Rina Rismaya	Universitas Terbuka	The effect of different drying methods on the chemical and microbiological quality of cardamom
5	14.30 - 14.45	20110	Agung Supriatna	Universitas Terbuka	Utilization of Spanish mackerel in Basreng Products as an Effort to Diversify Locally-Based Food : Study of Nutritional Content and Sensory Quality
6	14.45-15.00	20101	Adhi Susilo	Universitas Terbuka	Controversies in the Traditional Uses of Kaempferia galanga

ROOM F

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Sustainability Living B, Sustainability Living E, Nature Conservation)

Moderator : Fitria Amastini, S.Kom., M.T.I.

ROOM Manager : Siti Hadijah Hasanah, S.Si., M.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30704	Ayu Fahimah Diniyah Wathi	Universitas Terbuka	The role of inorganic chemistry in promoting sustainable living
2	13.45 - 14.00	10501	Sri Maulidia Permatasari	Universitas Terbuka	Validity and Reliability Testing of Student Digital Literacy Instrument in Distance Education
3	14.00 - 14.15	10503	Selly Anastassia Amellia Kharis	Universitas Terbuka	Exploring the Relationship between Digital Literacy and Generational Profiles: A Clustering Analysis of New Students at Universitas Terbuka Jakarta
4	14.15 - 14.30	10508	Selly Anastassia Amellia Kharis	Universitas Terbuka	Application of SMOTE in Multiclass Body Mass Index Classification: A Study on Data Imbalance And Model Performance
5	14.30 - 14.45	30705	Shiva Faizah Aulia Rachman	Universitas Darussalam Gontor	Conceptual Analysis of Hifdz Bi'ah as a Solution to Building Sustainable Living: Case Study Finland
6	14.45 - 15.00	30201	Rijali Noor	Lambung Mangkurat University	Rain Garden Models for Enhanced Reduction of Total Suspended Solids (TSS): A Comparative Analysis of Performance Local Species and Ecological Impact

ROOM G

Subtheme : Technological Innovations in Natural Science for Sustainable Environment
 (Applied Mathematics for Natural Resource Management, Statistical Modelling in Environmental Science, Artificial Intelligence Application in Green Technology)

Moderator : Darsih Idayani, M.Si.

ROOM Manager : Sitta Alief Farihati, S.Si., M.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	10203	Tri Wiyayanti Septiarini	Universitas Terbuka	A comparative of maximum temperature forecasting model in Surabaya
2	13.45 - 14.00	10204	Arsyelina husni johan	Universitas Terbuka	Solar Radiation Forecasting Using ARIMA and SARIMA Models
3	14.00 - 14.15	10207	Made Diyah Putri Martinasari	Universitas Terbuka	The Impact of Climate Factors and Land Area on Rice Production in Bali: A Regression Analysis for Agricultural Sustainability
4	14.15 - 14.30	10301	Mayang Anglingsari Putri	Universitas Terbuka	Implementation of Decision Tree Algorithm for Activity Recommendations Based on Air Quality Index (AQI) and PM2.5 Pollution in Indonesia
5	14.30 - 14.45	10406	Irpan Kusyadi	Universitas Terbuka	Implementation of the K-Means Algorithm to Determine the Classification of River Water Quality in Jakarta Based on Chemical Parameters
6	14.45 - 15.00	10407	Ronny Susetyoko	Politeknik Elektronika Negeri Surabaya	Analytical Dashboard Development for Agricultural Commodities Using Data Mining to Support Food Security

ONLINE PRESENTATION SCHEDULE

BREAKOUT ROOM 1 (Zoom Apps)

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Biodiversity)

Moderator : Athiefah Fauziyyah, S.T.P., M.Si.

ROOM Manager : Yudo Ramdani

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30102	Mutia Erti Dwiastuti	National Research and Innovation Agency	Status And Future of Protection Against Grape Downy Mildew (<i>Plasmopara viticola</i>) Disease In Indonesia
2	13.45 - 14.00	30104	Dr. Ir. Badruzsaufari, M.Sc	Universitas Lambung Mangkurat	Phylogenetic and Morphological Diversity Analysis of South Kalimantan's Climbing Perch (<i>Anabas testudineus</i> Bloch 1972)
3	14.00 - 14.15	30107	Mochammad Zamroni	National Research and Innovation Agency (BRIN)	Assessment of Functional Feeding Groups of Macroinvertebrates in Minimally Disturbed Inlet Rivers of Lake Maninjau, Indonesia
4	14.15 - 14.30	30112	Rendy Ginanjar	National Research and Innovation Agency (BRIN)	Evaluating Fish Species Diversity and Ornamental Fish Potential in the Tekalong River, Kapuas Hulu, West Kalimantan
5	14.30 - 14.45	30114	Oktora Susanti, S.Pi., M.Si.	University of Lampung	Profile Compound of Bacterial symbiont from Pahawang Marine sponge As An Antibacterial
6	14.45 - 15.00	30105	Muhammad Ezza Addien Al Vithra	Universitas Lambung Mangkurat	Phylogenetic Analysis of Local Mangosteen and Wild Relatives (<i>Garcinia</i> spp.) using maturase-K (<i>matK</i>) Gene Marker
7	15.00 - 15.15	30203	Ratna Alfina Nurcahyani	Universitas Darussalam Gontor	Collaborative Biodiversity Conservation Strategies between Environmental Science and Public Policy: A Case Study of Gunung Leuser National Park, Indonesia
8	15.15 - 15.30	20401	Mery Berlian	Universitas Brawijaya	The Impact of Information Technology Implementation on Agribusiness Supply Chain Management

BREAKOUT ROOM 2 (Zoom Apps)

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Biodiversity)

Moderator : ing. Mohamad Rajih Radiansyah, B.AS., M.Sc

ROOM Manager : Naufal Rifky Cahya, S.Kom.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30106	Ahmad Alfarisyi	Universitas Lambung Mangkurat	Molecular Characterization of trnL-F Gene of Endemic <i>Dendrobium</i> from Banua Botanical Garden, South Kalimantan, Indonesia
2	13.45 - 14.00	30109	Ridha Wati	Universitas Lambung Mangkurat	Ethnobotany of <i>Artocarpus</i> Clan Plants by the Dayak Maanyan Tribe in East Dusun District, Central Kalimantan
3	14.00 - 14.15	30113	Arif Muazam	Universitas Gadjah Mada	Gene Analysis of Waxy Local Sorghum (<i>Sorghum bicolor</i> (L.) Moench) Gunungkidul
4	14.15 - 14.30	30110	Anna Safarrida	Universitas Gadjah Mada	Analysis of DNA Barcode Sequences rbcL and ITS in the Cultivated Maman Plant (<i>Cleome gynandra</i> L.) from Riau
5	14.30 - 14.45	30111	Rabilla	Universitas Lambung Mangkurat	Distribution of <i>Tiwadak Banyu</i> (<i>Artocarpus teysmannii</i>) in South Hulu Sungai and Central Hulu Sungai Districts, South Borneo Province
6	14.45 - 15.00	30115	Zulfa Afifah	Universitas Padjadjaran	Identification of drought-tolerant F3 rice genotypes using phenotypic and SSR marker analysis
7	15.00 – 15.15	30117	Rony Irawanto	Universitas Brawijaya	Introduction of Aquatic Plant Diversity as an educational model for phytoremediation in the Purwodadi Botanic Garden
8	15.15 - 15.30	30101	Whika Febria Dewatisari	Universitas Terbuka	Alkaloid Diversity in <i>Mitragyna speciosa</i> (Kratom) Influenced by Strain Characteristics and Geographic Source

BREAKOUT ROOM 3 (Zoom Apps)

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Sustainable Environmental Policies, Management of Natural Resources and Environment, Regional and Environmental Planning)

Moderator : Guntur Bagus Pamungkas, S.T., M.P.W.K.

ROOM Manager : Randy Adhiputra, S.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30602	Muhammad Bagus Adi Wicaksono	Universitas Sebelas Maret	Administrative Sanctions To Ensure Reclamation Obligations And Coal Post-Mining Activities As An Effort To Restore Environmental Quality In Indonesia
2	13.45 - 14.00	30604	Risman Ramadwika	Universitas Terbuka	A Critical Review on Job Creation Law and Its Potential Implications for Food Agricultural Land Protection
3	14.00 - 14.15	30601	Asep Saepulloh	Institut Teknologi Bandung	Challenges and opportunities of land degradation neutrality implementation in various countries and its implications for Indonesia: a systematic review
4	14.15 - 14.30	30603	Nur Azizah	Bina Nusantara University	The Impact of Green Innovation, Green Product and Eco-Efficiency on Company Performance of Indonesian Mining Sector
5	14.30 - 14.45	30301	Abi Syaibah	Universitas Andalas	Investigating the Effects of Shape and Size of Dimer Gold Nanoparticles on the Efficiency of CIGS Solar Cells
6	14.45 - 15.00	30401	Budi Utomo	Universitas Tanjungpura	Utilizing Geographic Information Systems to Analyze Physical Conditions for Policy-Making in Kapuas Hulu for Sustainable Development Goals
7	15.00 – 15.15	30307	Lilik Sulistyowati	Universitas Terbuka	Exploration of solar radiation utilization as an environmentally friendly energy source: potential areas on Sumba Island
8	15.15 - 15.30	20404	Priscila O.G Limbong	Sekolah Tinggi Manajemen Asuransi Trisakti	Sensitivity Analysis and Optimal Funding Strategy for Catering MSMEs in Facing Raw Material Price Fluctuations to Increase Profitability

BREAKOUT ROOM 4 (Zoom Apps)

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Nature Conservation, Fisheries Management and Sustainability, Sustainable Living B)

Moderator : Sri Utami, S.ST., M.Kes.

ROOM Manager : Randy Adhiputra, S.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	20501	Ardhana Reswari Utami	IPB University	Status of pollution and carrying capacity of waters for intensive vaname shrimp cultivation on the coast of Cilacap, Indonesia
2	13.45 - 14.00	20502	Sulistiono	IPB University	Macrozoobenthos community structure in mangrove water ecosystem in Pejarakan Village, Bali, Indonesia
3	14.00 - 14.15	30204	Sutriyono	Universitas Bengkulu	Population and Production Conditions In Red Junglefowl Preservation By The Community In Central Bengkulu Regency, Bengkulu Post Covid-19
4	14.15 - 14.30	30701	Dini Nurmalasari	Politeknik Caltex Riau	Improving Panic Disorder Classification Using SMOTE and Random Forest
5	14.30 - 14.45	30706	Laode Abdul Kadir	Halu Oleo University	Hydroxyapatite/MgO Composites for Bone Applications Derived from Biowaste Pokea Clam Shells (<i>Batissa violacea</i> var. <i>celebensis</i> Von Martens 1897): Structure and Mechanical Properties
6	14.45 - 15.00	30702	Navtalia	Universitas Terbuka	Analysis of the Prevalence of Sexually Transmitted Diseases Using STD Direct Flow Chip Based on Gender
7	15.00 – 15.15	30202	Muhammad Noor	Universitas Lambung Mangkurat	DNA Barcoding Analysis of Endemic <i>Dendrobium</i> Orchids from the Meratus Mountains, South Kalimantan, Indonesia, Based on trnL-F Marker
8	15.15 - 15.30	20420	Hulaifi	Universitas Terbuka	Digital Technology by Actors Agricultural Sector MSMEs InThe Framework of Business Sustainability on Lombok Island, NTB.

BREAKOUT ROOM 5 (Zoom Apps)

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Nature Conservation, Fisheries Management and Sustainability, Sustainable Living B)

Moderator : Dian Nursantika, S.Kom., M.Cs.

ROOM Manager : Dian Nurdiana, S.Kom., M.Kom.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	10506	Siti Kustini	Politeknik Negeri Banjarmasin	Artificial Intelligence-Driven Learning for Sustainable Education: An Empirical Investigation of Learners' Perceived AI Presences in Vocational Higher Education
2	13.45 - 14.00	10507	Rahma Pitria Ningsih, S.Pd., M.Pd	Politeknik Negeri Banjarmasin	Development of an E-Vocabulary Module for Heavy Equipment Engineering Students: Enhancing Technical Literacy for Sustainable Innovation Aligned with SDGs
3	14.00 - 14.15	10509	Yanuar Setiadi	National Research and Innovation Agency	A Computer-Aided Design of Molecularly Imprinted Polymer for Di(2-Ethylhexyl) Phthalate Detection
4	14.15 - 14.30	10510	Novi Sukma Drastiawati	Universitas Negeri Surabaya	Analysis Of Heat Input In Gas Metal Arc Welding (SMAW) Based On Tensile Strength And Impact Of Environmental Improvement
5	14.30 - 14.45	10505	Azriel Christian Nurcahyo	University of Technology Sarawak	Enhancing QoS with Deep Learning, A Comprehensive Literature Review on Model Optimization and Advanced Data Labeling
6	14.45 - 15.00	10502	Puput Dani Prasetyo Adi	Universitas Terbuka	Strategies to Improve LoRaWAN Performance in Multi-Communication
7	15.00 – 15.15	10403	Lintang Patria	Universitas Terbuka	Financial Services Optimization through IoT Implementation in Fintech Management
8	15.15 - 15.30	10205	Krishna Prafidya Romantica	Universitas Terbuka	Analysis of Factors that Influence the Volume of Indonesian Palm Oil Exports to Countries on the Asian and European Continents

BREAKOUT ROOM 6 (Zoom Apps)

Subtheme : Collaborative Contribution in Environmental Science to Achieve Sustainable Living (Environmental Health and Pollution, Management of Natural Resources and Environmentg)

Moderator : Mirza Permana, S.T., M.Si.

ROOM Manager : Ulul Hidayah, S.T., M.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	30501	Ani Listriyana, S.Si, M.T	Universitas Abdurachman Saleh Situbondo	The Effect of Soaking Time in Seawater on the Absorption Capacity of "Plasbut" Paving Block
2	13.45 - 14.00	30502	Farid Mujayyin	Polythecnic Cement Indonesia	Operational management and maintenance of Watertreatment Technology as an effort to repair and increase the quality of processing river water to make it clean
3	14.00 - 14.15	30506	Dra. Lia Yulia Budiarti, M.Kes	Universitas Lambung Mangkurat	Ability Test of Taro (Colocasia esculenta L.) Leaves Extract to Reduce Coliform Bacteria in River Water
4	14.15 - 14.30	30509	Putu Edi Yastika	Universitas Mahasaraswati Denpasar	Pig Farm Liquid Waste Processing Technology and Its Utilization in Cacao Plants
5	14.30 - 14.45	30503	Fifia Zulti	Institut Pertanian Bogor (IPB University)	Advancing Sustainable Textile Wastewater Management: A Bibliometric Analysis Of Ecotechnology Applications
6	14.45 - 15.00	30504	Wa Ode Annisha Munasari	Universitas Terbuka	Scientific Approaches to Waste Management and Environmental Monitoring: Insights from Serangan Island's Pollution Issues
7	15.00 – 15.15	30306	Wa Ode Annisha Munasari	Universitas Terbuka	Integrating Hydrological Science and Environmental Geography in Post-Hydrometeorological Disaster Land Rehabilitation: A Case Study of Bedugul Baturiti,Bali

BREAKOUT ROOM 7 (Zoom Apps)

Subtheme : Role of Agriculture Science for Sustainable Food Production (Functional Food for Health and Sustainability, Green Food Production and Packaging)

Moderator : Ariyanti Hartari, S.Tp., M.Si.

ROOM Manager : Effendi Hansori, S.Kom.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	20109	Dewi Sartika	Universitas Abdurachman Saleh Situbondo	Bioactive Compounds And Anti-Microbial Properties Of Rubber Cassava Peel Against Staphylococcus Aureus, Salmonella Sp, Vibrio Sp And Escherichia Coli
2	13.45 - 14.00	20202	Septariawulan Kusumasari	Polythecnic Cement Indonesia	Utilization of Extrusion Techniques in Pasta Processing from Beneng Taro Flour and Durian Rind Flour
3	14.00 - 14.15	20203	Dini Nur Hakiki	Universitas Lambung Mangkurat	Crisping effectiveness for freshness restoration in baby pak choi
4	14.15 - 14.30	20102	Aulia Floribunda Harp	Universitas Mahasaraswati Denpasar	Induction of Embryogenic Callus Formation in Polyploid Allium sativum var. 'Lumbu Hijau'
5	14.30 - 14.45	20103	Desya Amalia Wibowo	Institut Pertanian Bogor (IPB University)	Proximate Analysis of Commercial Stunting Alleviation Foods: Nutrimora Cookies Case Study
6	14.45 - 15.00	20106	Angga Puja Asiandu	Universitas Terbuka	The Superior Astaxanthin Producer: Optimization of environmental factors in Haematococcus pluvialis 2 Stages cultivation to enhance its growth rate and astaxanthin accumulation as the strongest natural antioxidant
7	15.00 – 15.15	20201	Dinda Nur Haliza	Universitas Terbuka	The Role of Agricultural Science Innovation in Increasing Sustainable Food Production for Stunting Prevention in Indonesia
8	15.15 – 15.30	20206	Ariyanti Hartari	Universitas Terbuka	Mapping Research Trends in Food Waste and Sustainable Development: A Bibliometric Analysis from 2012 to 2024

BREAKOUT ROOM 8 (Zoom Apps)

Subtheme : Role of Agriculture Science for Sustainable Food Production (Sustainable Agribusiness and Supply Chain, Functional Food for Health and Sustainability)

Moderator : Iffana Dani Maulida, M.Sc.

ROOM Manager : Faizal Maulana, S.Kom.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	20402	Suryani Dewi, S.P.,M.Si	Sulawesi Barat University	West Sulawesi Coconut Shell Briquette Agro-Industry : Potential and Marketing Strategies for the Global Market
2	13.45 - 14.00	20403	Wiwit Denny Fitriana	Universitas Pesantren Tinggi Darul Ulum	Optimization Of Chicken Feather Waste into High-Protein Chicken Feather Meal
3	14.00 - 14.15	20406	Iffana Dani Maulida	Universitas Terbuka	Transportation Optimization in the Food Industry using Interior Point OPTimizer (IPOPT) Problem Solver
4	14.15 - 14.30	20408	Anton Susanto	MCIT Indonesia	Development of Digital Smart Community in Sustainable Agriculture Practice in Indonesia.
5	14.30 - 14.45	20409	Thomas Nugroho	IPB University	Socio-economic Conditions of Fishermen, Fish Farmers and Fish Processors in the Fisheries Cluster Area in West Kutai Regency of East Kalimantan Province, Indonesia
6	14.45 - 15.00	20413	Fauzan Hamdani	Universitas Terbuka	Preference And Willingness To Pay Of Consumers Against Siam Orange And Mandarin Orange In Jakarta
7	15.00 – 15.15	20410	Moh. Shohwan Najih	Universitas Terbuks	Influence Of Harvest Rice Using A Combine Machine On The Welfare Of Farm Workers In Lamongan District
8	15.15 – 15.30	20111	Mar'atus solikha	Universitas Terbuka	The technique for controlling armyworms uses noni leaf extract on spinach plants

BREAKOUT ROOM 9 (Zoom Apps)

Subtheme : Technological Innovations in Natural Science for Sustainable Environment
 (Applied Mathematics for Natural Resource Management, Artificial Intelligence
 Application in Green Technology)

Moderator : Heri Kurniawan, S.Si., M.Si.

ROOM Manager : Elin Herlinawati, M.Si.

No	Schedule	ID	Presenter	Institution	Title
1	13.30 - 13.45	10202	Ika Nur Laily Fitriana	Universitas Terbuka	Cluster Analysis of Province in Indonesia Based on Characteristics of Agricultural Sector Using Self-Organizing Maps
2	13.45 - 14.00	10206	Elok Faiqotul Himmah	STMIK Palangka Raya	Analysis of the Effect of Local Food-Based Nutritional Intervention on Stunting Dynamics in Central Kalimantan: Mathematical Modeling and Simulation Approach
3	14.00 - 14.15	10401	Muhammad Syahid Pebriadi	Politeknik Negeri Banjarmasin	The Use of ST-DBSCAN in the Analysis of Covid-19 Spread Patterns Based on Spatio-Temporal Data
4	14.15 - 14.30	10404	Denisha Trihapningsari	Universitas Terbuka	Sentiment Analysis of ChatGPT Exploration Based on Opinions on Platform X Using Naïve Bayes Algorithm
5	14.30 - 14.45	10405	Siska Aprilia Hardiyanti	Politeknik Negeri Banyuwangi	Road Maintenance Application for Identifying Flexible Pavement Damage Based on Deep Learning
6	14.45 - 15.00	10201	Wahyu Dwi Cahyani	Universitas Terbuka	Population Projection in Bantul Regency with Malthusian Growth Model and Verhulst Growth Model
7	15.00 – 15.15	10402	Herbert Siregar	Universitas Pendidikan Indonesia	Generative AI: Enhancing Student Engagement in Learning and Encouraging Lecturers to Become Effective Facilitators
8	15.15 - 15.30	10208	Endah Septa Sintiya	Politeknik negeri malang	Application of Machine Learning for Predictive Maintenance in Power Transformer Health Assessment: A Comparative Study of SVM, ANN, and Random Forest

ROOM A

DNA Barcoding and Biodiversity of Commercially Important Fishes (Actinopterygii) from Middle Bank, Penang, Malaysia: A First Report

Amirah Hurzaid^{1,2*}, Jamsari Amirul Firdaus Jamaluddin², Noorul Azliana Jamaludin³, Noor Farhana Fakhruddin¹, and Muhammad Amiruddin Afiq Suhailan¹

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Abstract

Middle Bank, located off Penang's eastern coast, is a crucial marine habitat featuring one of the last extensive seagrass beds in the region. It serves as an important nursery for various marine species, including juvenile fish and invertebrates. However, this ecologically significant area is threatened by coastal development and land reclamation. Efforts are underway to establish it as a marine sanctuary to safeguard its ecosystems and local fisheries. This study provides the first molecular analysis of fishes from the Middle Bank using DNA barcoding. The cytochrome oxidase subunit 1 (COI) gene was selected for its accuracy in species identification. A total of 23 fish specimens were sequenced at a 656 bp segment of the COI gene to examine DNA barcode variation. The analysis identified 14 taxa: 11 at the species level, 2 at the genus level, and 1 at the family level. Remarkably, 11 taxa were newly recorded in the area. Additionally, the study recorded the presence of the newly identified fish species in Peninsular Malaysia, *Ambassis octava* as reported by Ghazali et al. (2024). The results underscore the biodiversity richness of Middle Bank, emphasizing the need for conservation efforts to protect this unique marine ecosystem for future generations.

Keywords: diversity, molecular, morphology, marine

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Morphometric Study of Green Peacock Feather as Material for Dadhak Merak Of Reog Ponorogo

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Abstract

The demand for peacock feathers for the Reog Ponorogo art and the declining population of the green peafowl (*Pavo muticus*) in the wild creates a dilemma between cultural preservation and conservation efforts. The green peafowl, which is now protected, results in restricted access to its natural habitat, while the Reog Ponorogo art requires 1,000-2,000 peacock feathers for a single dhadak merak (peacock mask). This research aims to analyze the morphometry of green peacock feathers and estimate the production scale necessary to sustainably meet the needs of Reog Ponorogo. The study will be conducted at the Ndalem Kerto aviary in Ponorogo, using samples from five male green peafowl. The research methods include direct observation with morphometric measurements of the feathers using a flexible measuring tape and semi-structured interviews. Measurements will focus on the length of feathers from various parts of the peacock's body, following standard protocols. Understanding the types and sizes of feathers used in dhadak merak is essential for estimating feather requirements and production potential in a breeding context. The study's results are expected to bridge the gap between cultural needs and conservation efforts and provide a scientific basis for the development of sustainable peafowl farming in Indonesia. This research could serve as a guideline for implementing peafowl farming to support both cultural preservation and species conservation.

Keywords: green peacock, peacock feather, morphometry, dhadak merak, reog ponorogo.

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Improving the Quality of Solid Organic Fertilizer Using Decomposer

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Abstract

The utilization of cow manure can reduce environmental pollution around livestock farms. One way to utilize cow manure is by turning it into solid organic fertilizer. The quality of solid organic fertilizer is determined by various factors, including the raw materials, fermentation methods, and composting time. The aim of this study is to improve the quality of solid organic fertilizer using a decomposer. The production of solid organic fertilizer in this study was carried out in two ways: first, by turning the cow manure every 10 days for 40 days (A), and second, using a decomposer with ratio of 1 Liter/3 tons to the cow manure and then turning it every 10 days for 40 days (B). The results showed an increase in C-organic content by 9.56%, nitrogen by 42.02%, phosphate by 19.00% and potassium by 6.56%. This indicates that the addition of a decomposer in the composting process can improve the quality of solid organic fertilizer.

Keywords: Cow Manure, Decomposer, Organic Fertilizer

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Eel Conservation and Local Wisdom in Ambon

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Abstract

Eels are catadromous fish that are endangered. The problem for conservation of eels is infrastructure development in rivers. They cannot go upstream as larvae. On the other hand, there are still many gaps in our understanding of eels reproduction. Therefore, conservation of eels requires basic data, including community's response toward conservation of eels. The location of eels are in Larike, Waai, and Tulehu

Keywords: Eels, conservation, local wisdom

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Convolutional Neural Network for Plant leaves identification

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Abstract

Plant identification is mostly based on morphology. Some morphological characteristics are leaf base, leaf tip. Plant identification by morphology requires manual recognition. Artificial neural networks are used of plant leaves recognition. Previous studies did not specify result (Hati & Sajivan, 2013), although it achieve 90% accuracy. Research questions are: How to develop CNN for plant recognition , how to utilize plant leaf characteristics for identification, and how to build a database of plant leaves for CNN-based identification Research method consists of 1) Making an overall design of CNN-based plant recognition app, 2)Building a database of leaves from 10 plant species , 3) Develop CNN, 4) Try out , 5) UI/UX . At the preliminary phase, this study produced the CNN application. The database of twelve plant families were put in folder for each family. The next step was training of the CNN application. Next, the application was followed by test. It was followed by validation. However, there were some mistakes during the recognition process.

Keywords: leaves, plant, convolutional neural networks

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Molecular Biological Aspect of Papua Crayfish

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Abstract

Cherax crayfish live in freshwater in Papua and Australia. There are 25 species in Papua, including 16 species in Papua province and 9 Cherax species in West Papua province. This crayfish has high economic value. The demand of cherax crayfish in Jakarta is 2-3 ton monthly. The high demand affects Cherax population. Local fishermen rarely found the crayfish in rivers. Jayawijaya regency in Papua province is a habitat of several crayfish species. Some Cherax species live in Jayawijaya regency are *C. acheronis*, *C. minor*, and *C. monticola*. Previous studies on Cherax crayfish in Papua is limited. Meanwhile, this study may produce more findings on taxonomy, evolution, and biogeography. This study focus is on biodiversity of Cherax crayfish in Jayawijaya regency in Papua. The aim is to gain information on genetic biodiversity of Cherax crayfish in Papua. The researchers use DNA sequencing and BLAST. The result shows that the sample is derived from *C. monticola*.

Keywords: Cherax, Cherax monticola, Papua, Jayawijaya

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Exploring The Attitudes of Solor Island Fishermen in East Nusa Tenggara for Concerning Their Orientations To Blue Whales Conservation

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Abstract

This is a study about attitudes of fishermen of Lamakera community in Motownwutun village in East Solor Regency in East Nusa Tenggara. This community is famous for tradition of hunting blue whale (*Balaenoptera musculus*). The people have limited resources. Most people work as fishermen. Since blue whale is a protected marine mammal species, conservation is becoming important. Conservation effort need participation of local community. Therefore, this study aims at understanding attitudes of fishermen in Motonwutun village toward blue whale conservation. Respondents are fishermen. The result shows that fishermen have orientation toward blue whale conservation.

Keywords: Blue Whale, *Balaenoptera musculus*, conservation, Lamakera

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ROOM B

Water Resource Management Model For The Economic Strength Of Coastal Communities

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Abstract

The lives and livelihoods of coastal fishermen in Bone Bolango Regency, Gorontalo Province are very vulnerable to climate and environmental change. Diversification of fishermen's income sources outside of fisheries can be an effective way to overcome the negative impacts of environmental change. This study aims to analyze the effect of business diversification on the welfare of coastal fishermen's households in Bone Bolango Regency, analyze the effect of business diversification on coastal environmental sustainability in Bone Bolango Regency, analyze the effect of fishermen's household welfare on coastal environmental sustainability in Bone Bolango Regency, and formulate a model of diversification of coastal resource utilization that is suitable in Bone Bolango Regency. The data collected are primary data and secondary data carried out using observation techniques, interview techniques, documentation techniques. Independent variables are selected according to considerations based on empirical conditions of coastal areas, researcher capabilities and the availability of supporting theories and characteristics of the research area. Data analysis in this study uses *SEM PLS* analysis. The independent or endogenous variables selected are coastal community income from fisheries businesses (X1), coastal community income from livestock businesses (X2) and coastal community income from environmental service businesses (X3). Based on the model developed from relevant theories, while the exogenous variables are welfare (Y1) and environmental sustainability (Y2), the model was tested using the *PLS-based Structure Equation Model (SEM)*. Based on the model around the coastal area of Bone Bolango Regency, it will not reduce the level of environmental sustainability of the coastal area of Bone Bolango Regency. The results of the analysis show that the path coefficient of the direct influence of environmental service efforts on environmental sustainability is obtained a value of 0.288 at t-statistic 3.327. These results prove that environmental service efforts have a significant effect on environmental sustainability. The positive path coefficient can be interpreted that the relationship between environmental management services and environmental sustainability of the coastal area of Bone Bolango Regency is unidirectional. Thus, there is sufficient empirical evidence to accept the hypothesis that the increasing environmental service efforts, the increasing environmental sustainability of the coastal area in Bone Bolango Regency. The path coefficient of the direct influence of community welfare on environmental sustainability is obtained a value of 0.610 at t-statistic 2.986. These results prove that the welfare of fishermen's households has a significant effect on environmental sustainability. The positive path coefficient can be interpreted that the relationship between community welfare and environmental sustainability of the coastal area of Bone Bolango Regency is unidirectional. that the more the welfare of fishing households in coastal areas in Bone Bolango Regency increases, the more environmental sustainability will increase.

Keywords: coastal communities, economic, welfare, environment and sustainability.

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The Challenges of Land Conversion in Realizing A Livable City, Case Study: Depok City

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Abstract

Jakarta, the business center of Indonesia, has experienced significant changes due to urbanization. The outward expansion of the urban area has affected surrounding areas, including Depok City. Depok, situated to the south of Jakarta, serves as a buffer zone. The impact of urbanization has resulted in a rise in the number of people working in Jakarta but residing in Depok City. This trend has caused an increase in land conversion in Depok to satisfy the housing demand. Not only has the amount of undeveloped land decreased, but household waste and garbage have also increased due to population growth. If this situation is not addressed promptly, creating a livable and sustainable city will become challenging. The involvement of multiple parties is crucial in developing sustainable and livable urban planning, which can enhance the welfare of its residents. This study employs a quantitative research method with a descriptive format. The land conversion will be measured using NDVI spatial analysis and then correlated with the analysis of changes in built-up land use. The results of this analysis are expected to identify land conversion areas in Depok City, which can be utilized as a consideration in urban planning to create a livable and sustainable urban space.

Keywords: land conversion, livable city, NDVI, land-use, urban planning

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The Role of Social Groups in Environmental for the Sustainability of Community Life in the Small Islands of Banda Neira

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Abstract

Communities on small islands have high environmental vulnerability. Besides, communities on small islands are also very dependent on nature for their survival. This dilemma is felt directly by the people of the Banda Islands, Central Maluku Regency, most of whose economic activities are based on nature: fisheries, plantations, and marine tourism. With these economic activities, the damage potential to the environment is very possible. Responding to this, various stakeholders have made efforts to protect the environment, including non-governmental social groups. Various social groups in the Banda Islands are the 'backbone' in preserving the environment through initiatives that involve the wider community. This study aims to see what extent the role of the social groups contributes to environmental for the sustainability of lives of people in the Banda Islands. This study is a qualitative study, with data collection using observation and interviews, uses (1) stakeholder analysis to see the role of the non-governmental social groups compares to other stakeholders and (2) content analysis to see how the groups influence the sustainability of lives. The results of this study are expected to provide recommendations on how the environment and humans can live side by side and sustainably, especially for small islands.

Keywords: small islands, social groups, environmental sustainability, natural resource based economy

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The Conversion of Productive Agricultural Land and the Growth of Developed Land in Ciampea District, Bogor Regency

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Abstract

This study examines the conversion of agricultural land due to the expansion of built-up areas in Ciampea District, Bogor Regency, Indonesia, to identify land cover changes, factors driving agricultural land conversion, reasons why farmers sell their land, and the economic impacts on food crop production. Using both quantitative and qualitative methods, the study employs land cover analysis, factor analysis, and lost productivity analysis. Findings indicate a direct relationship between the growth of built-up areas and the reduction of undeveloped land, with built-up areas increasing by approximately 218.7 hectares annually. Six variables influence land conversion: location, irrigation channels, economic pressure, population growth, and housing needs. Additionally, six factors affect farmers' decisions to sell: land size, private sector influence, generational factors, living expenses, family responsibilities, and government policies. The conversion of agricultural land has significantly reduced the economic value of food crop production. From 2019 to 2023, the shift of productive land to non-agricultural use resulted in an estimated revenue loss of IDR 4,138,080,000 from rice farming. These findings highlight the urgent need for sustainable land management strategies to balance development and agricultural productivity.

Keywords: land conversion, agriculture, Indonesia, GIS, remote sensing.

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Characterization and Application of Distillation Waste from Kjeldahl Protein Testing as a Liquid Medium for Air Pollution Control

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Abstract

The challenge of managing industrial waste and controlling air pollution necessitates innovative solutions. Wet scrubbers are effective in removing pollutants from industrial emissions; however, the conventional liquid media used in these systems can be costly and environmentally detrimental. This study explores the feasibility of repurposing waste products from distillation processes, specifically those derived from protein analysis using kjeldahl method, as an alternative liquid medium for wet scrubbers. The research evaluates the efficiency and pollution absorption capacity of distillation by-products. The results demonstrate that the reused distillation by-products effectively absorb pollutants and function as a viable medium in wet scrubbers. This approach not only provides a cost-effective solution but also supports Sustainable Development Goals (SDGs) by promoting Goal 12 (Responsible Consumption and Production) through recycling and waste reduction, and Goal 13 (Climate Action) by enhancing air quality and reducing emissions. The study highlights the potential of utilizing industrial waste to advance environmental sustainability and support climate action objectives.

Keywords: Innovation, kjeldahl method, waste recycling, sustainability, waste management

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Collaboration of the Jakarta Sadar Sampah Programme in waste management as a sustainable environmental development in Jakarta

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Abstract

The Jakarta Sadar Sampah Programme Collaboration is a strategic initiative that aims to address waste management issues in Jakarta through a multi-stakeholder approach, involving the government, community, and private sector. The programme is designed to support sustainable environmental development by promoting effective and efficient waste management, including waste reduction, segregation and recycling. This research analyses the impact of this collaboration on waste management in Jakarta, with a focus on increasing public awareness, the effectiveness of the waste management system, and its contribution to the cleanliness and health of the urban environment. The results showed that the strong collaboration between various stakeholders in the programme successfully increased community participation in waste management and resulted in a significant reduction in the volume of waste disposed to landfills. The findings indicate that a collaborative approach to waste management can be an effective model for other cities to adopt in order to achieve sustainable environmental development.

Keywords: waste management, recycling, environmental awareness, sustainable development

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Utilization Of Tofu Waste As A Cattle Feed

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Abstract

The price and quality of raw materials used for concentrated cattle feed fluctuate, significantly impacting production costs and milk quality. Consequently, cattle farmers often rely on expensive kilogram-grade concentrates. However, soybean curd residue (SCR) offers a viable alternative for cattle as an additional nutrient source. Tofu factories generate substantial amounts of SCR, which can be utilized as a concentrate feed with a potential yield of 1,895.59 ST (medium to high grass) or 3,811.56 ST (low grass). Research has shown that tofu waste can be a more effective feed concentrate material when combined with other ingredients like bekatul or corn, enhancing nutritional quality. Utilizing *Trichoderma* to break down complex organic matter in soybean curd waste reduces crude fiber and increases nutritional value through bioactive compounds. This fermentation process enhances digestibility and nutritional profile, making it a more effective feed material for cattle. This study demonstrates that utilizing tofu waste as animal feed can produce high-quality dairy products and fertilizer. The relevant components of tofu waste include high levels of coarse protein and carbohydrates. However, its high water content necessitates special attention in processing and use, requiring it to be fresh, clean, and odorless. The utilization of tofu waste as cattle feed offers numerous benefits but also necessitates careful handling. This implication can serve as a foundation for developing policies that promote the use of industrial waste as a sustainable source of animal feed. Involving local communities in creating natural feed using tofu waste enhances community knowledge about its benefits and boosts local food security. By integrating these practices into policy formulation, we can support sustainable agriculture and improve livestock management.

Keywords: Cattle Feed, Tofu Waste, Soybean Curd, Feed Formulation, Food Security

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ROOM C

Financial feasibility analysis of black soldier fly (*Hermetia illucens*) cultivation business in Bogor, West Java

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Abstract

The purpose of this study was to determine the financial performance of the Black Soldier Fly (BSF) cultivation business in Bogor. The components used to analyze financial performance are Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit Cost (B/C). The analysis of financial performance shows that the BSF cultivation business is feasible because it meets the criteria that have been applied, namely Net Present Value (NPV) with a value of Rp12,352,433.04. Internal Rate of Return (IRR) with a value of 649.64%. Benefit Cost (B/C) with a value of 73.12.

Keywords: Black Solider Fly, Business Feasibility, Alternative Feed, NPV, IRR, Net B/C

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Analysis of Cayenne Pepper and Kenyan Chickpea Intercropping Farming at Gapoktan Wargi Panggupay, Suntenjaya Village, Lembang

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Abstract

Intercropping is a mixture of cropping systems, that there are two types or more crops are grown on a plot of land at the same time. Planting intercropping patterns can be used as one of the efforts to improve productivity and increase farmers' income. Intercropping chili and kenya beans has been carried out by Gapoktan Wargi Panggupay since 2000. The research was conducted at Wargi Panggupay Farmers Group in Kampung Gandok, Suntenjaya village, Cibodas, Lembang from January to March 2017. The results explain intercropping cultivation of chili and kenya beans starting from land preparation, seeding, planting, maintenance and harvesting. In addition, the financial indicator shows that the NPV is Rp 545.038.918, IRR is 30.23%, Net B/C is 1.49, and Pay Back Periode is 3 years and 1 month. The results of the financial analysis indicators shows that intercropping farming of chili and kenya beans is financially feasible to implement..

Keywords: Chili, Kenya Beans, Intercropping, Feasibility Study

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Analyzed of Formal Credit Acces in Financial Technology Utilization of Chilli Farmers in Sukabumi Regency (A case in PT. Crowde)

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Abstract

Banking is a financial institution that drives the economy of the community, including farmers. Based on 2019 national financial literacy survey data, the financial literacy index of 38.03% is low. This makes acces to formal credit difficult especially for farmers. Therefore, financial technology is present as a financial institution that can fulfil the needs of the farmer. This study is intended to analyze how the performance of farmer characteristics, financial literacy, quality of financing service affect acces to formal credit in the use of financial technology. The location of financial technology research on partner farmers of PT CROWDE in Kabandungan District, Sukabumi Regency. The research method uses mixed method with 100 respondent Kabandungan District. The analitical methode use descriptive analysis and PLS (Partial Least Square) analysis, data processing using Microsoft excel, SPSS, and Smart PLS software. Based on the result study, that showed the characteristics of the farmers, financial literacy, and service quality have a significant effect on acces to formal credit based on the t- statistics value.

Keywords: Acces to formal credit, Farmers, Financial literacy, financial technology, Service quality

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The Influence of Lifestyle, Price, and Quality on the Interest in Purchasing Organic Vegetables on the Kecipir Application

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Abstrak

This study aims to analyze the factors that influence the interest in purchasing organic vegetables on the Kecipir application. The variables studied include lifestyle, price, and quality as independent variables that are assumed to have an influence on consumer purchasing interest. The method used in this study is a survey by distributing questionnaires to Kecipir application users. Data were analyzed using linear regression to see the relationship between independent variables and purchasing interest. The results showed that lifestyle and quality had a significant effect on purchasing interest, while price did not have a significant effect. These findings provide insight for Kecipir application managers in formulating more effective marketing strategies to increase interest in purchasing organic vegetables on their platform.

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The Effect of Strategic Food Commodity Prices on Inflation in DKI Jakarta Province

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Abstract

Food is the main commodity that is urgently needed by all levels of society. The population in DKI Jakarta Province reaches more than ten million people, so it has a high need for food. Food commodity prices fluctuate and often increase. Rice, beef, eggs, chicken meat, red chili, and shallots are strategic food commodities that have price fluctuations. This study aims to find out how much the price fluctuations of the six commodities affect the inflation rate in DKI Jakarta Province. The data used is in the form of a monthly time series from January 2018 to August 2024, which is sourced from the National Strategic Food Price Information Center and the Central Statistics Agency. The data was processed using the Vector Error Correction Model (VECM) analysis method. The results of the study show that the fluctuations price of red chili, chicken meat, and rice commodities contribute significantly to inflation in DKI Jakarta Province. This research suggests the need for inflation control policies, especially in the production and distribution of strategic food commodities.

Keywords: inflation, prices, food commodities, Vector Error Correction Model (VECM)

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Analysis of Trade Integration and Export Performance of Indonesian Tobacco Commodities In The Global Market (HS Codes: 2401.10, 2401.20, & 2401.30)

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Abstract

Tobacco is one of Indonesia's leading export commodities, playing a crucial role in the national economy. The export value of tobacco commodities from 2014 to 2019 showed a positive growth of 3.72%. Indonesia's main tobacco export destinations are Belgium, Singapore, and the Dominican Republic. This study aims to analyze trade integration between exporting and importing countries and the performance of Indonesian tobacco exports in the global market, focusing on HS codes 2401.10, 2401.20, and 2401.30. The methods used in this study include Intra Industry Trade (IIT) analysis and Export Product Dynamic (EPD) analysis, using time series data from 2014 to 2021. The results indicate that trade integration between Indonesia and its trading partners (Dominican Republic, Sri Lanka, Vietnam, Belgium, and Singapore) for tobacco commodities is relatively weak. The EPD analysis shows that most of the main tobacco export destination countries hold strong positions. The study recommends increasing production efficiency, optimizing marketing strategies, and adapting to international regulations to enhance the competitiveness of Indonesian tobacco exports in the global market.

Keywords: IIT, EPD, Tobacco, Competitiveness

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ROOM D

Competence of Agricultural Extension Assistant Worker

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Abstract

Agricultural Extension Assistant Worker (AEAW) have an important and strategic role in supporting agricultural development programs. This is following the main task of AEAW, namely assisting PPL-PNS following sub-district extension programs. Therefore, agricultural extension workers, especially AEAW as the spearhead of agricultural development, need to increase their competence so they can oversee government programs. The research objectives are 1) Identifying the internal and external characteristics of AEAW, 2) Identifying the quality of AEAW, 3) Identifying AEAW competencies, 4) Analysing the relationship between AEAW's internal and external characteristics and their competencies, 5) Analysing the relationship the quality of AEAW with its competence. The research design is in the form of explanatory research. The method for collecting data is a survey. The research population was all AEAW in Serang Regency. The sample obtained randomly was 40 AEAW. Data analysis includes quantitative and qualitative analysis. Data analysis used Spearman Rank correlation analysis. The results of the research show that the internal characteristics of AEAW are that the education level of the instructors is mostly bachelor's degree graduates, work period of more than 5 years, and motivation to become an instructor to excel. The external characteristics of AEAW are that the number of farmer groups assisted is more than 15 groups and they have attended training more than 4 times. The quality of the extension that has been carried out is the intensity of the extension at more than 20 meetings in the last month, the extension material is easy to apply to the target of the extension, and the extension agents more often use a combination of 2 extension methods. Respondents' perceptions of the competence of AEAW instructors, namely personal competence, socio-cultural, andragogy, and innovative communication, are in a good category. The external characteristics of extension workers, namely the number of assisted farmers, are significantly related to innovative communication competence. Extension materials are significantly related to the personal competence and innovative communication of AEAW agents.

Keywords: competence, agriculture extension assistant worker

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Utilization of Smart Farming Technology Based on Urban Farming in Malang City

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Abstract

Smart Farming is developed to transform the management patterns of agricultural resources from conventional methods to more productive and efficient ones, through automation control and monitoring systems utilizing Internet of Things technology (IoT). The aims of this paper is to analyze the utilization of smart farming technology based on urban farming in the city of Malang. The method used in this writing is descriptive study with a literature review approach. The analysis results show that precision agriculture is designed based on artificial intelligence (AI) and the Internet of Things (IoT), which can assist farmers or agricultural entrepreneurs in enhancing, automating, and optimizing all factors expected to increase productivity and design smart agricultural systems. Urban agriculture has become one of the strategies to meet food needs at the small community level, including smart irrigation and smart lighting. Smart farming developed in Malang City has already utilized digital and information technology to enhance productivity, efficiency, and sustainability of agricultural production in urban areas. The use of technology in agriculture, such as drones and aerial sensors, helps farmers monitor crop conditions comprehensively, detect pests and diseases, allowing preventive measures to be taken more swiftly. Smart farming implemented in Malang City is one of the strategies to enhance agricultural development in urban areas.

Keywords: smart farming, urban farming, malang city

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The Level of Farmers' Knowledge About The Utilization of Biosaka In Suka Agung Village, Buay Bahuga District, Way Kanan Regency

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Abstract

Biosaka is one of the renewable technology systems in the development of modern organic agriculture. Biosaka is an organic formulation derived from plant extracts that acts as a plant elicitor, functioning to enhance the resilience of plants against pests and diseases. The aim of this research is to determine the level of farmers' knowledge and the effectiveness of agricultural extension regarding the utilization of biosaka. This research was conducted in Suka Agung Village, Buay Bahuga District, Way Kanan Regency, Lampung. The method used in this research is the experimental method with a one group pre-test post-test design. In this design, an initial measurement (pre-test) is conducted, followed by a specific treatment, namely an outreach activity, and then a subsequent measurement is carried out (post-test). The respondents of the research are 30 farmers who are accustomed to using chemical fertilizers in their farming activities. The data is analyzed descriptively by examining the level of knowledge of farmers and the effectiveness of agricultural extension services. The research results show that the increase in farmers' knowledge about the utilization of biosaka is 41.00% (quite effective) and the effectiveness of agricultural extension is 56.94% (quite effective). The agricultural extension conducted on the utilization of biosaka as a means to reduce the use of chemical fertilizers on rice plants can be categorized as quite successful.

Keywords: farmers' knowledge level, effectiveness of agricultural extension, biosaka

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Dynamics of Fish Production from Landed Catches at The Labuan Fishing Port

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Abstract

The fish catch landed at Labuan fishing port comes from the Sunda Strait and its surroundings, and is mostly carried out by small-scale fishermen. The fish catch production fluctuates from year to year. This study aims to analyze the dynamics of fish production from the catch landed at Labuan fishing port, Banten. The study was conducted from June 2022 to March 2023 at Labuan fishing port. The data collected were primary and secondary data in the form of fish production data from the catch at Labuan fishing port from 2015 to 2022. Secondary data was obtained from the Labuan Fish Auction office. Data analysis used descriptive analysis, namely identification of fish catches, frequency of fish appearance, composition of fish production from the catch. The results of the study indicated that 128 species were found from 55 families. The types of fish came from the pelagic fish group (45 species), reef fish (38 species), demersal fish (45 species). Fish production from 2015 to 2022 fluctuated and tended to decline. The largest fish group biomass occurred in 2015, which was 615.72 tons consisting of 447.26 tons of pelagic fish, 126.00 tons of demersal fish, and 42.46 tons of reef fish. The types of fishing gear used by fishermen are purse seine, bottom otterboat trawl, and longline. The fish with the highest frequency of occurrence are *Selar crumenophthalmus*, *Rastrelliger kanagurta*, *Nemipterus* sp, *Thunnus tonggol*. The fish with the highest frequency of occurrence in sequence are *Thunnus tonggol*, *Nemipterus* sp, *Rastrelliger kanagurta*, and *Selar crumenophthalmus*.

Keywords: fish catches, Labuan, production

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Biological Aspects of *Cherax quadricarinatus* For Early Detection Efforts And Rapid Response Of Invasive Alien Species (Case In West Java)

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Abstract

In Indonesia, freshwater crayfish are native just in Papua while non-native in the rest of the country. These decapod crustaceans are successfully cultivated in Indonesia to meet the demand for ornamental trade, consumption, and fishbait. The market for 3-5 inches of freshwater crayfish has developed in many areas, including Bogor, Jakarta, Yogyakarta, Central Java, East Java, West Sumatra, Lombok, Sulawesi etc. The demand is quite high; thus crayfish cultivation is an alternative business with good prospects for the world of fisheries. On the other hand, the cultivation of crayfish has also certain negative consequences: intentional releasing and accidental escapes of crayfish negatively impacted native biota and whole ecosystems, and new pathogens (e.g. *Aphanomyces astaci* causing crayfish plague) were recorded. Especially parastacid redclaw crayfish (*Cherax quadricarinatus*) has a very good adaptability to the local environment, so it later develops into an Invasive Alien Species (IAS). Given the potential risk to the conservation of local native aquatic biota, it is necessary to have a strategy and action plan for controlling the IAS. This research aims to obtain an overview of the bio-ecological situation of *C. quadricarinatus* in several field locations, its utilization pattern and economic value, as well as the social and institutional conditions of the local fishery. The research location was Lido Lake and Jatiluhur Reservoir, West Java. Biological data collection was carried out in July-September 2024 with 6 samplings. The data collected were the number of individuals, carapace length, total length, and weight of *C. quadricarinatus*. Data analysis using statistical descriptive and length-weight relationship (LWR) analysis, namely $W = aL^b$. Total *C. quadricarinatus* sampled was 204 individuals with the percentage of males and females being 39.2% and 60.8%, respectively. *C. quadricarinatus* was mostly found at a depth of 3-5 m. The maximum total length was 146 mm and the minimum was 52 mm, while the maximum carapace length was 48 mm and the minimum was 16 mm. The analysis of the LWR revealed that *C. quadricarinatus* had a negative allometric growth pattern ($a < b$) with a value $a = 0.0251$ and b value $b = 2.1408$, means that the growth in length was faster than in weight, indicating a relatively thin body shape.

Keywords: freshwater crayfish, *Cherax quadricarinatus*, invasive alien species, IAS

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The Gonadal Study of Green Mussel *Perna viridis* from The Java Sea in Gresik Regency

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Abstract

This research aims to analyze the reproductive system of the green mussel *Perna viridis* originating from the Java Sea, Banyuurip Bay, Ujungpangkah District, Gresik Regency. The study used a descriptive method on the population of green mussel from cultivation in the Tancap Chart belonging to Traditional Fishermen, a bagan tancap, which is located in the Java Sea at coordinates 06°52'18.84" South Latitude and 112°29'41.19" East Longitude. Sample preservation using Bouin's solution and microtechniques using Haematoxylin-Eosin (HE) dye at the Biosciences Laboratory, Brawijaya University. Observation of histology images using an Olympus BX3 microscope (M=400x) by determining research variables (1) macroscopic anatomy of the ovaries and testes, (2) characteristics of the acini, (3) differential characteristics of oocytes, (4) reproductive status, and (5) oocyte quality. Oocyte diameter was measured using Image-J software. The results of this study confirm that the green mussel *Perna viridis* is gonochoristic. The female sex has female gonads, and the male sex has male gonads, which can be easily distinguished if the gonads have developed or differentiated. Gonads are composed of acinus, which is where gametogenesis takes place. Based on the characteristics of the acinus, female mussels and male mussels are in spawning status, which shows a synchrony reproductive strategy to increase optimism for reproductive success. The oocyte diameter of the green mussel *Perna viridis* is $2.15 \pm 0.28 \mu\text{m}$, which shows that the quality of the oocytes is much smaller than that of other green mussel populations that have been reported.

Keywords: Adaptation, Eggs, Gonadal Development, Mussels Farming, Reproduction Strategy.

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Sustainability of Ornamental Plant Farming in Achieving Sustainable Development Goals

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Abstract

Ornamental plants are one of the commodities that are favored by the public as an element of entertainment and aesthetics. The increasing demand for ornamental plants in the 2020s has caused ornamental plant farmers to expand their businesses even more widely. The existence of these ornamental plant entrepreneurs needs to be considered so that their businesses last a long time and can be used as a permanent livelihood. This article was written with the aim of: (1) explaining the factors related to the sustainability of ornamental plant farming and (2) explaining the role of ornamental plant farmer groups in achieving sustainable development goals. This article was written based on a literature review on the development of ornamental plant farming and efforts to maintain its existence. The study begins with the prospects of ornamental plants as one of the businesses that support the economy of farmer households, factors that support the sustainability of ornamental plant farming businesses, and the role of farmer groups for ornamental plant farming businesses in achieving sustainable development goals. The literature is based on concepts related to farming businesses and the role of farmer groups, as well as research results that examine factors related to ornamental plant farming businesses. It is hoped that this article can enrich studies related to sustainable agricultural development in the field of farming, as well as motivate parties who want to become ornamental plant farmers.

Key words--- farmer groups, ornamental plants, ornamental plant farming, sustainable development

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Prospects of gedi leaves (*Abelmoschus manihot* L.) as alternative feed ingredients to produce functional green livestock products

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Abstract

Indonesia has variety of herbal plants that can be used as alternative feed ingredients for animal feed. Generally, these plants have relatively high proteins content and contain secondary metabolites in the form of antioxidants and antibacterials. Gedi leaves (*Abelmoschus manihot* L.) are one of the plants that grow in tropical climates that are widely used as vegetables and traditional herbal medicines. Gedi leaves contain relatively high proteins and calcium. In addition, gedi is also a source of antioxidants. This is due to the presence of secondary metabolites, especially flavonoids, which can inhibit free radicals, lower cholesterol, and have antibacterial properties that are almost the same as the Amoxicillin in inhibiting pathogenic bacteria. This article was written based on the results of a literature reviews that aims to explore the potential and utilization of Gedi leaf flour as an alternative animal feed ingredient. This article will further explore the potential of gedi flour as animal feed and determine its effects on the livestock produced. Do the functional food products produced have low cholesterols, high antioxidants, and high unsaturated fatty acids? The functional livestock food ingredients produced can later be used to overcome stunting problems in society and can support food sovereignty.

Keywords: alternative feed, functional livestock green product, *Abelmoschus manihot* L

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ROOM E

Effect of Freeze and Hot-Air Drying Method on Chemical Composition of Yam Flour

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Abstract

The aim of this research is to investigate the effect of temperature on the composition of yam flour active ingredient which consists of total phenol content, anthocyanin and carotenes. Freeze-dryer method (FdM) condition of flour is $-30 \pm 5^{\circ}\text{C}$ for 72 hours, while Cabinet-dryer method (CdM) condition of flour is $50 \pm 5^{\circ}\text{C}$ for 16 hours. The moisture content of yam flour with FdM and CdM are ranged from 5.12 to 10.18 % and from 8.56 to 9.31 % respectively. Using Folin Ciocalteu reagent and chlorogenic acid, it is found that the total phenolic compounds of the flour with FdM and CdM range from 826 to 2707 mg/100 g dw and from 423 to 2137 mg/100 g dw respectively. HPLC profile showed that anthocyanin with FdM and CdM ranged from 0.1 to 99.87 mg/100g dw and from 0.00 to 14.18 mg/100 g dw respectively. These indicate that FdM can maintain the anthocyanin in flour 70 to 86 % higher than CdM. Carotenoid content with FdM and CdM range from 20.19 to 103.20 mg/100g dw and from 21.0 to 35.0 mg/100g dw respectively. As with anthocyanin, the FdM can maintain carotenoid content in flour up to 66 %.

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A Bibliometric Analysis of Indonesian Fermented Fish

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Abstract

Indonesia has a variety of fermented fish products. Research publications on fermented fish products are currently being developed. This review aims to determine the research trends in fermented fish products, especially in Indonesia. The data sources used are scientific documents published in Scopus. The data results were then processed using Excel software and VOSviewer to carry out data mapping. A total of 81 relevant documents were obtained regarding Indonesian fermented fish, with the most output from Indonesia, namely 73 papers. The collected publication documents have a published year of 1967 - 2024 consisting of 51 articles, 2 books, 4 book chapters, 21 conference papers, and 3 reviews. The fermented fish products discussed in the articles are *terasi* (13 articles), *bakasang* (8 articles), *budu* (8 articles), *peda* (6 publications), *bekasam* (11 publications), *jambal* (3 publications), *rusip* (4 publications), *chao* (4 publications), *wadi* (3 publications), and *inasua* (5 publications). The current trend topic of fermented fish research is the discussion of the influence of the fermentation process on fish on the characteristics, quality, amino acids, and probiotics of the resulting product.

Keywords: Fermented fish, Fermentation, Lactic Acid Bacteria; Traditional Food

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The Potential of Pineapple Waste and Proteolytic Content to Enhance Added Value

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Abstract

Pineapple canning industries generate large quantities of solid PPW, which can account for up to 50% of the total weight of processed pineapples. Other processing methods produce 25-35% waste on average. Bromelain is distributed across all parts of the pineapple, with significant activity found in the peel, core, and crown. Studies indicate that bromelain can be effectively extracted from these parts using various methods, including ethanol precipitation and membrane filtration techniques. The extraction process not only recovers the enzyme but also contributes to sustainable waste management by valorizing pineapple by-products. The protease activity of bromelain varies by part of the pineapple. Peel exhibits the highest protease activity, with values reported around 3.417 U/ μ g. Crown shows a protease activity approximately 46.78 units, with an optimum temperature of 35°C and pH of 7. Core has a slightly lower activity than the peel, around 36.93 units, with an optimum temperature of 55°C. Bromelain extracted from pineapple waste demonstrates significant proteolytic activity and can be effectively utilized in various applications, highlighting the importance of utilizing all parts of the pineapple for both economic and environmental benefits. Its proteolytic activity makes it suitable for use in meat tenderization, digestive aids, and as an anti-inflammatory agent, and it also presents a promising opportunity for enhancing poultry nutrition while addressing waste management challenges. Its incorporation into poultry diets can lead to improved growth performance and sustainability in poultry production systems to provides a cost-effective alternative to conventional feed ingredients, particularly during periods of high prices for traditional feed sources. Proper management and utilization of this abundant pineapple waste is crucial to minimize environmental pollution and add value to the byproducts.

Keywords: Pineapple by products, Bromelain, Proteolytic activity, Poultry feed

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The Effect of Different Drying Methods on The Chemical and Microbiological Quality of Cardamom

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Abstract

Cardamom is a spice that has a unique aroma. Fresh cardamoms have characteristics that are perishable, so it must be dried immediately for preservation and utilized for a long time. However, different drying methods may affect the quality of the resulting cardamom. This study aimed to evaluate the effect of different drying methods on the chemical and microbiological characteristics of cardamom. This study used a completely randomized design (CRD) with different types of drying treatments, namely sun drying and roasting at a temperature of 60 °C. The chemical responses measured were water content, ash content, fat content, protein content, and carbohydrate content, while the microbiological characteristics analyzed were total microbes and yeast molds. The results showed that different types of drying significantly affected the water content and total yeast molds in cardamom, but did not significantly effect on ash content, fat content, protein content, carbohydrate content, and total microbes. Sun-dried cardamom had lower water content and total yeast molds compared to modified drying. The results of this study provide new insight into the effect of drying method on chemical and microbiological quality of cardamom.

Keywords: cardamom, drying method, modified drying, spices, sun drying

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Utilization of Spanish mackerel in Basreng Products as an Effort to Diversify Locally Based Food: Study of Nutritional Content and Sensory Quality

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Abstract

The utilization of Spanish mackerel (*Scomberomorus* sp.) in basreng (fried meatball) products represented a food diversification effort based on local resources, potentially supporting national food security and regional economic growth. This study aimed to evaluate the nutritional content and sensory quality of Spanish mackerel basreng to assess its potential as a consumer-preferred food alternative. An experimental method was employed using three basreng formulas (Original, Spicy, and Balado). Proximate and sodium analyses were conducted using standard SNI methods and ICP-OES. Sensory testing involved 35 panelists evaluating aspects of shape, taste, aroma, and color using a 5-point Likert scale. Results indicated that Spanish mackerel basreng is rich in energy (558.73 Kcal/100g), fat (36.79%), and carbohydrates (52.60%), with a relatively high sodium content (954.71 mg/100g). ANOVA tests on sensory aspects showed no significant differences between formulas ($p > 0.05$). In conclusion, Spanish mackerel basreng showed potential as a local-based food diversification product with good nutritional content and sensory acceptance by consumers. This research provides important information for the development of innovative food products that can support food security and meet community nutritional needs.

Keywords: Spanish mackerel, Food diversification, Basreng, Sensory analysis

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Controversies in the Traditional Uses of *Kaempferia galanga*

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Abstract

Kaempferia galanga belongs to the Zingiberaceae family and is commonly known as sand ginger, aromatic ginger, lesser galangal, kencur, or resurrection lily. In modern treatment, essential oils are used mainly in areas related to digestive problems, respiratory difficulties, and skin infections. Traditional medicine suggests that the application of oleoresins obtained from *K. galanga* has a facilitative osteoprotective effect. Besides its use in traditional medicine, *K. galanga* displays abilities to clean air pollution. This review presents and details controversies in the use of *K. galanga* rhizomes in traditional medicine and the common use of other plants. Specifically, the quality of the organoleptic usefulness of *K. galanga* rhizome, unrelated to the basic production of volatile substances, is detailed. In the creation of this review, publication guidelines were observed to obtain a reproducible systematic review. Only validated papers were cited. Together with the use of a methodology based on a real selection scheme, according to the most testified uses, solutions for the controversies have been given in order to make the *K. galanga* preparation more acceptable and reliable.

Keywords: *Kaempferia galanga*, traditional medicine, organoleptic

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ROOM F

The Role of Inorganic Chemistry in Promoting Sustainable Living

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Abstract

This article systematically reviews existing research on the role of inorganic chemistry in achieving sustainable living. The review aims to support ongoing research, guide other researchers in locating relevant studies, and identify future research opportunities in this field based on research-based knowledge. The study indicates that modifying inorganic materials for agricultural purposes is an interesting field that continues to be studied today and can provide many benefits to the environment. Inorganic chemistry plays a fundamental role in the pursuit of sustainable living by providing critical advancements in agriculture, environmental preservation, and resource management. This paper explores the application of inorganic chemistry in developing innovative materials and technologies that enhance the efficiency and sustainability of agrochemical practices. Key advancements include the use of metal-organic frameworks (mofs) and engineered nanomaterials for precise delivery of agrochemicals, reducing environmental impact while enhancing crop yields. These innovations not only address current challenges in sustainable agriculture but also offer broader societal and environmental advantages. The study underscores the indispensable role of inorganic chemistry in driving sustainable practices and promoting a more resilient and eco-friendly future.

Keywords: Inorganic chemistry, environment, agrochemical, sustainable agriculture.

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Validity And Reliability Testing of Student Digital Literacy Instrument In Distance Education

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Abstract

One of the characteristics of Distance Education (DE) is the separation between students and lecturer, so various media are needed for learning activities. These media can be either print or non-print/digital. However, along with technology advancements, the media transformation from printed to digital media has increased significantly. Each Individual are required to adapt and keep up with the advancements, including university students. They are required to use digital technology ethically, effectively, and critically. In other words, it is very important for DE students to have strong digital literacy skills. For measurement of digital literacy, it is needed a valid and consistent instrument. This study aims to test the validity and reliability of instrument, so that it can be used to collect data for digital literacy measurement of students in Distance Education. The method used for instrument validity test is Pearson Correlation. While the Alpha Cronbach's method is used for instrument reliability test. The sample for this study is students of Universitas Terbuka and there are 33 questionnaire items to be tested. The results show that 31 of the questionnaire items are both valid and reliable.

Keywords: Digital literacy, distance education, reliability test, validity test³⁶

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Exploring the Relationship between Digital Literacy and Generational Profiles: A Clustering Analysis of New Students at Universitas Terbuka Jakarta

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Abstract

The advancement of information technology has influenced digital literacy across different generations and has affected how they interact with technology, access information, and participate in the digital space. As an institution that serves various generations, Universitas Terbuka Jakarta is an ideal setting to study the relationship between digital literacy and generational profiles. This research aims to explore the relationship between digital literacy and generational profiles among new students at Universitas Terbuka Jakarta using clustering analysis. The clustering method employed is k-means. The data used is primary data consisting of 4,347 individuals. The analyzed data includes generational profiles, occupational profiles, internet access time ranges, most frequently performed internet activities, internet usage duration, and digital literacy classification. After categorical data transformation and normalization, the Elbow method was used to determine the optimal number of clusters. The clustering analysis identified three groups with different characteristics in terms of digital literacy and internet usage behaviour. These findings provide deep insights into how digital literacy varies among different generations and how this influences their patterns of technology use. This research is expected to serve as a foundation for developing more effective learning strategies and digital literacy programs tailored to the needs of different generations.

Keywords: Digital literacy, generational profiles, clustering, k-means, elbow method

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Application of SMOTE in Multiclass Body Mass Index Classification: A Study On Data Imbalance And Model Performance

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Abstract

Body Mass Index (BMI) is a widely used metric for estimating an individual's body fat based on their weight and height. BMI can monitor and explain a person's nutritional status. BMI classification is not always limited to binary classification but can extend to multiclass scenarios. However, a common challenge in BMI classification is the imbalance in data distribution across different classes, where some classes have significantly fewer instances compared to others. This study aims to compare the performance of multiclass BMI classification with and without the application of the Synthetic Minority Over-Sampling Technique (SMOTE). This research uses various machine learning algorithms to classify BMI into five distinct categories: extremely weak, weak, normal, overweight, obesity, and extreme obesity. The machine learning algorithm used in this research consists of Decision Tree (DT), Random Forest (RF), Support Vector Machine (SVM), K-Nearest Neighbor (KNN), and Logistic Regression. The findings indicate that the application of SMOTE improves multiclass BMI classification performance, as seen by improvements in accuracy, precision, recall, and F1-score for all tested algorithms machine learning.

Keywords: Body Mass Index (BMI), Multiclass Classification, SMOTE, Machine Learning

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Conceptual Analysis of Hifdz Bi'ah as a Solution to Building Sustainable Living: Case Study Finland

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Abstract

This research aims to investigate the Finland state in the concept of hifdz bi'ah, especially in the face of the threat of sustainable living which is increasingly becoming a global task as environmental challenges and climate change increase. Finland is one of the happiest countries in the world. Achieving happiness in Finland is considered easy because the government guarantees a solid foundation for building a fulfilling life and a promising future. In this context, the researcher will discuss using a qualitative library research method by analyzing the concept of hifdz bi'ah (environmental protection) which is one of the derivatives of maqosid shari'ah and offers a relevant approach in building a sustainable life. This research analyzes the application of the concept of hifdz bi'ah as a solution in building a sustainable life with a case study focus on Finland, a country known for its environmental policies and sustainability practices. The results show that Finland has comprehensive and innovative environmental policies such as effective recycling and efficient waste management. So in this case Finland has reflected the principles applied to the concept of hifdz bi'ah.

Keywords: Hifdz bi'ah, Sustainable living, Finland

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Rain Garden Models for Enhanced Reduction of Total Suspended Solids (TSS): A Comparative Analysis of Performance Local Species and Ecological Impact

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Abstract

The increase in built-up land results in a decrease in rainwater infiltration and an increase in runoff volume that has the potential to cause flooding. One solution is to create a rain garden on limited land as a bioretention area that filters runoff water. This study aims to analyse the variety of plants used to reduce the total suspended solids (TSS) concentration through a modelling approach. Rain garden modelling uses ten reactors containing plants and one reactor without plants as a control. The plants varied were Red Shoots (*Syzygium oleana*), Paris Lilies (*Chlorophytum comosum*), and Purslane (*Portulaca oleracea* L.). After acclimatisation for one month, the experiment was conducted four times. The 1st and 2nd days of pre-treatment water samples came from an artificial solution with a soil dose of 7.5 grams, which had a TSS concentration of 787 mg/L. In comparison, the 3rd and 4th days of pre-treatment water samples came from an artificial solution with a soil dose of 15 grams, which had a TSS concentration of 1,411 mg/L. The average efficiency of reducing TSS concentration in Red Shoots was 87%, Paris Lilies 82.59%, and Purslane 78.61%.

Keywords: ecological impact, rain garden, rainwater management, runoff, total suspended solids

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ROOM G

A Comparative of Maximum Temperature Forecasting Model in Surabaya

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Abstract

Maximum temperature refers to the highest temperature recorded in a specific period, usually a day. It's the warmest point reached during that time frame. Surabaya, as a major urban centre, experiences varying climatic conditions that can significantly impact various sectors. By leveraging historical maximum temperature data and several techniques, this research proposes a comprehensive forecasting model. The models consist of exponential smoothing, autoregressive integrated moving average (ARIMA), fuzzy time series (FTS), neural network (NN), and neural network autoregressive (NNAR). In this study, the dataset will be grouped into training and testing data by 75%:25%. The performance of the developed model will be evaluated using appropriate metrics, including root mean squared error (RMSE) and mean absolute percentage error (MAPE). The results concluded that the NNAR model is the most outstanding method, with 0.4983 of RMSE and 0.3723 of MAPE. The results will provide valuable insights into the accuracy and reliability of the model for forecasting maximum temperatures in Surabaya.

Keywords: Forecasting, Surabaya, temperature.

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Solar Radiation Forecasting Using ARIMA and SARIMA Models

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Abstract

In an effort to address sustainable development, one of the initiatives being undertaken is the use of renewable energy, including solar energy utilization. Indonesia Government through the Ministry of Energy and Mineral Resources has set a target for the installation of rooftop solar power plants with a capacity of 3,600 MW, to be implemented gradually until 2025. One of the challenges in solar energy utilization is the variability of solar radiation, which results in uncertainty in energy resilience. By conducting solar radiation forecasting, the information about timing and amount of solar energy available at a given moment can be obtained. This will lead to more effective solar energy management planning, particularly in determining the optimal timing for production, storage, and distribution processes. This study aims to model solar radiation forecasting in Tangerang Selatan using ARIMA and SARIMA models. The suitability of the models is tested using standardized residuals, autocorrelation function and partial autocorrelation function for the residuals. Historical hourly solar radiation data is used to obtain these models. The results of this study show that the ARIMA model is suitable for daily solar radiation forecasting, while the SARIMA model is suitable for monthly solar radiation forecasting.

Keywords: Solar radiation, forecasting, ARIMA, SARIMA, time series.

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The Impact of Climate Factors and Land Area on Rice Production in Bali: A Regression Analysis for Agricultural Sustainability

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Abstract

The SDGs Knowledge Hub regarding the 2030 Agenda for Sustainable Development includes 17 global targets for 2030, one of which is zero hunger. Efforts to achieve this goal include ensuring food security. The Food Security Index (IKP) issued by the National Food Agency (BPN) ranked Bali as the province with the highest IKP in 2022. This study aims to examine the influence of climate factors (rainfall and duration of sunlight) and harvested land area on Bali's rice production. The research data was obtained from the Central Statistics Agency (BPS) and the Meteorology, Climatology, and Geophysics Agency (BMKG) in 2020-2023. The collected data was processed using SPSS software with multiple linear regression methods. The test results, with a 95% confidence level, show that the three independent variables together can explain 98.2% of the variance in the dependent variable. This indicates that other variables, not examined in this study, account for the remaining 1.8% of the variance. However, on an individual basis, only the harvested land area shows a significance level less than 0.001. Furthermore, the results of this study can serve as a consideration for policymakers to maintain the sustainability of Bali's agriculture and achieve better food security in the future.

Keywords: Rice production, food security, research.

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Implementation of Decision Tree Algorithm for Activity Recommendations Based on Air Quality Index (AQI) and PM2.5 Pollution in Indonesia

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Abstract

The increasing air pollution in major cities across Indonesia has raised serious public health concerns. This research aims to develop a recommendation system for daily activities based on the Air Quality Index (AQI) and PM2.5 levels. Using the Decision Tree algorithm, this study categorizes air quality conditions and provides appropriate activity recommendations, such as whether it is safe to exercise outdoors or if it is better to stay indoors. The model utilizes AQI and PM2.5 data collected from various Indonesian cities. The results indicate that the Decision Tree algorithm is effective in providing accurate activity recommendations based on air quality, demonstrating significant accuracy in classifying air conditions. The implementation of this system is expected to aid individuals in making informed decisions about their daily activities, thereby mitigating health risks associated with air pollution exposure.

Keywords: Decision Tree, Air Quality, AQI, PM2.5, Activity Recommendation, Indonesia.

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Implementation of the K-Means Algorithm to Determine the Classification of River Water Quality in Jakarta Based on Chemical Parameters

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Abstract

This study aims to implement the K-Means algorithm to classify river water quality in Jakarta based on key chemical parameters: Biochemical Oxygen Demand (BOD), nitrate, and nitrite levels. Water quality is a critical issue in Jakarta due to industrial activities and domestic waste contributing to pollution, which poses risks to public health and ecosystems. Data were collected from various monitoring points along the rivers, focusing on the aforementioned parameters. The K-Means algorithm was applied to classify the water samples into categories: good, moderate, and poor quality. Results showed that high BOD levels were strongly associated with poor water quality, indicating organic pollution. Elevated nitrate and nitrite levels also contributed to water degradation, reflecting impacts from agricultural runoff and wastewater. The study demonstrates the K-Means algorithm's effectiveness in analyzing water quality data and suggests its potential as a valuable tool for environmental monitoring. The findings highlight the need for enhanced water quality management in Jakarta and provide a foundation for future research to integrate more parameters and time-based data to better understand trends and support decision-making in pollution control.

Keywords: K-Means algorithm, river water quality, environmental monitoring, water pollution.

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Analytical Dashboard Development for Agricultural Commodities Using Data Mining to Support Food Security

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Abstract

Sustainable Development Goals (SDGs) include no poverty, zero hunger, and the achievement of food security. Requirements for food security include 1) adequate availability, 2) stability of availability, and 3) accessibility. A region's food availability can be represented by the potential of its agricultural commodities. The stability of food availability can be seen from time series data on food crop production. Analytical dashboards have become an urgent application platform available to agricultural stakeholders to monitor, predict, map and position commodities as a basis for decision making and establishing policies/programs to support national food security. The aim of this research is to develop an analytical dashboard using data mining. Several data mining techniques were used to build this dashboard. Agricultural commodity predictions use the Autoregressive Integrated Moving Average (ARIMA) and Neural Network (NN) methods. Commodity mapping uses the K – Means and Ordering Points to Identify Clustering Structure (OPTICS) method. The food security model for positioning a region uses Factor Analysis to select significant factors. For food security classification using ordinal Logistic Regression and Random Forest. The best performing methods are implemented into analytical dashboards as needed.

Keywords: analytics, dashboard, data mining, agricultural, food security

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BREAKOUT ROOM 1 (Zoom Apps)

Status And Future of Protection Against Grape Downy Mildew (*Plasmopara viticola*) Disease in Indonesia

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Abstract

The Indonesian government's attention to the development of grapes (*Vitis vinifera*) is increasing with an import substitution program of 20%. Tropical grape plant development needs to be aware of attacks by the fungus *Plasmopara viticola*, which causes downy mildew, which is the most damaging to grape plants. The current status of grape disease control still depends on the widespread use of fungicides. The intensity of contact fungicide use has led to increased resistance to this type of fungicide. With increasing fungicide resistance and increasing environmental problems, the use of chemical pesticides has become unpopular. The use of plastic shelters has been carried out, although inefficient on a large scale. Screening of resistant varieties has been done but is not widely used because tolerant varieties are less popular. New future approaches to limit the damage caused by downy mildew need to be further researched and adapted. Breeding to create new superior varieties that are resistant to downy mildew, biological control with biological agents and plants, and development of the use of superior microbial secondary metabolite biofungicides. This review summarizes the status of the disease and its control and explores future control strategies including a focus on hypovirulence and biological control agents.

Keywords: *Plasmopara viticola*; downy mildew; *Vitis vinifera*; fungicide resistance

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Phylogenetic and Morphological Diversity Analysis of South Kalimantan's Climbing Perch (*Anabas testudineus* Bloch 1972)

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Abstract

Climbing perch fish is very popular and widely consumed by the people of South Kalimantan because of its savory and nutritious taste. Most of the demand for this fish comes from nature, and only 10% of the fish is produced by cultivation. Papuyu conservation and breeding efforts must be carried out to ensure its sustainability, requiring phylogenetic and morphological diversity studies. The neighbor joining-multi alignment plot analyzed ten climbing perch's COI gene sequences from seven locations in South Kalimantan and 85 COI gene sequences found in the GenBank. The results showed that climbing perch from South Kalimantan and other regions in Indonesia and the Philippines clad differently from climbing perch from other countries such as India, Bangladesh, Malaysia, Thailand, and Vietnam. All COI sequences consisted of 28 haplotypes, and the sample from South Kalimantan consisted only of 1 haplotype and differed from the other populations. Network analysis of the haplotype populations inspired the idea that fish from South Kalimantan and the rest of Indonesia and the Philippines evolved later than other regions. Biplot and clustering analyses of 10 morphometric and eight meristic variables for 96 fish showed that fish from the Karang Dukuh area (Barito Kuala) tended to be more similar in characteristics to fish from Kusan Hilir (Tanah Bumbu) than from other areas in South Kalimantan.

Keywords: *Anabas testudineus*, COI gene, haplotype, diversity

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Assessment of Functional Feeding Groups of Macroinvertebrates in Minimally Disturbed Inlet Rivers of Lake Maninjau, Indonesia

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Abstract

The upstream area of the river is generally relatively free of anthropogenic disturbance and will serve as a baseline for measuring the level of ecosystem degradation. The feeding group of the invertebrate fauna can support river biomonitoring programs. The current study was to analyze the Functional Feeding Group (FFG) of macroinvertebrates in the minimally disturbed inlet rivers of Lake Maninjau. Macroinvertebrate samples were collected using Hess sampler in Maret to April 2019 at the seven inlet rivers of Lake Maninjau (Kurambik, Koto Gadang, Koto Kaciak, Kularian, Bancah, Ranggeh, and Batang Air). Environmental parameters were determined, including water temperature, electrical conductivity, turbidity, Total Dissolved Solids (TDS), Dissolved Oxygen (DO), pH, Orthophosphate, and Total Nitrogen (TN). A total of 1063 macroinvertebrate specimens from 56 taxa were classified into six FFG, including collector gatherers, collector filterers, predators, shredders, scrapers, and omnivores. Collector-gatherers were the most abundant group in all sites. Canonical Correspondence Analysis (CCA) revealed that predators and scrapers groups have a positive tendency to turbidity, electrical conductivity, and pH. Collector filterers have a positive correlation to dissolved oxygen.

Keywords: collector gatherers, dissolved oxygen, feeding group, upstream

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Evaluating Fish Species Diversity and Ornamental Fish Potential in the Tekalong River, Kapuas Hulu, West Kalimantan

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Abstract

Indonesia is known for its high fish diversity, with approximately 1,218 species of freshwater fish, 630 of which are endemic. However, there are still many water bodies in Indonesia whose biodiversity remains unexplored. This bioecological survey aimed to assess the potential for ornamental fish and overall fish biodiversity in the Tekalong River in Kapuas Hulu District, West Kalimantan Province. The research employed a purposive sampling method, focusing on variations in river morphology from upstream to downstream. The study area was divided into three stations: upstream, middle, and downstream. The fishing gear used included nets, scoope net, fishing rods, and fish traps. Physical and chemical water parameters measured include temperature, dissolved oxygen, pH, brightness, turbidity, total dissolved solids (TDS), conductivity, current velocity, salinity, ammonia (NH₃), nitrite (NO₂), nitrate (NO₃), phosphate (PO₄), alkalinity, and hardness. Additionally, the study observed plankton parameters, soil samples, habitat conditions, and vegetation at the sampling locations. The analyses focused on fish species diversity and abundance, species dominance, zooplankton and phytoplankton characteristics, water quality, and soil/sediment quality of the Tekalong River. The results identified 6 orders, 9 families, and 12 fish species, with a diversity index of 1.3, a uniformity index of 0.6, and a dominance index of 0.44. The study concludes that the Tekalong River contains fish species with potential for development as ornamental fish.

Keywords: Fish Diversity, Ornamental Fish, Tekalong River

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Profile Compound of Bacterial symbiont from Pahawang Marine sponge As An Antibacterial

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Abstract

Sponges are sessil organisms that produce secondary metabolites and functioning in protecting from predators and pathogen, communication, reproduction and competition for space. Some of those matabolites have potency as anticancer, antiviral, antioxidant, anti-inflammatory, antifungal and antibacterial. Aaptamine, isoaaaptamine, and methylaaptamine are some examples of secondary metabolite compounds produced by some sponges. Sponges generally has a symbiotic relationship with the microbes in their body. A number of active compounds isolated sponges were also found in symbiotic bacteria. The use of antibiotics directly or indirectly will increase the prevalence of resistance from pathogenic bacteria or normal flora which will develop into multi-drug resistant (MDR) strains. The search for new antibiotic compounds as an alternative, for bacteria that have become resistant and has become a task for researchers. The purpose of this study was to determine the microbial symbiont of marine sponge that has antibacterial activity against MDR bacteria, and to determine profile of the bioactive compounds structure contained. The results of this study were obtained 18 types of sponges and 102 bacteria symbiont from sponges. There were 45 isolates of active bacteria symbiont indicating the presence of potential metabolites.

Keywords: Bacterial symbiont, sponge, antibacterial, Multi Drug Resistant.

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Phylogenetic Analysis of Local Mangosteen and Wild Relatives (*Garcinia* spp.) using *maturase-K* (*matK*) Gene Marker

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Abstract

Mangosteen (*Garcinia mangostana*) is one of the leading commodities for national exports that tends to increase every year due to high demand and the character of the fruit that only grows in certain regions of the world. The productivity of mangosteen is still relatively low, so it is necessary to have a mangosteen plant breeding technique to produce superior seeds with a short amount of production and time. This study analyzed the phylogenetic relationship of local mangosteen and wild relatives (*Garcinia* spp.) based on the *maturase-K* (*matK*) gene marker. Twelve *Garcinia* samples were obtained and molecularly characterized using MEGA 11 software. The phylogenetic reconstruction showed that this germplasm was divided into 3 main groups, namely 5 species in clade I, 4 species in clade II, and 3 species in clade III. Species belonging to the same clade show close relationships. The results are also supported by the farthest genetic distance found in *Garcinia xantochymus* and *Garcinia parvifolia* species with an index value of 0.039 and the nearest genetic distance found in *Garcinia xantochymus* and *Garcinia celebica* with an index value of 0.001. Information about this genetic relationship can support plant breeding programs to produce superior *Garcinia* cultivars.

Keywords: *Garcinia*, *matK*, molecular, phylogenetic, relationship

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Collaborative Biodiversity Conservation Strategies between Environmental Science and Public Policy: A Case Study of Gunung Leuser National Park, Indonesia

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Abstract

Sumatran Orangutans and Tigers are critically endangered, with significant population declines over the past 40 years due to rapid deforestation from oil palm plantations and illegal logging. Land conversion and poaching also threaten the flora and fauna of these forests. Conservation efforts by the Sumatran Orangutan Conservation Program (YOSL) and the World Wildlife Fund (WWF) Indonesia, in collaboration with the government and Gunung Leuser National Park, aim to mitigate these threats and ensure the survival of these species. This study explores how integrating scientific research with policy frameworks can enhance conservation outcomes in Gunung Leuser National Park, a key ecological area in Indonesia. Using a qualitative approach with library research, the study analyzes data from previous research to evaluate the effectiveness of conservation strategies. Findings show that collaboration between environmental science and public policy in Gunung Leuser National Park has significant potential to improve conservation results. Despite progress in species protection and rehabilitation, long-term success requires ongoing commitment from all stakeholders and the adaptation of strategies to address evolving challenges.

Keywords: Nature Conservation, Environmental Science, Sustainable Living, Gunung Leuser National Park, SDG's.

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The Impact of Information Technology Implementation on Agribusiness Supply Chain Management

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Abstract

Agribusiness supply chain management plays a crucial role in ensuring the smooth distribution of agricultural products from upstream to downstream. The implementation of information technology (IT) in agribusiness supply chain management has brought significant impacts in improving efficiency, effectiveness, and transparency. This study aims to analyze the impact of IT implementation on agribusiness supply chain management. A literature review was conducted to identify various IT applications used in agribusiness, such as agribusiness information management systems, agricultural e-commerce platforms, and tracking and monitoring technologies. The results of this study show that the implementation of IT in agribusiness supply chain management provides various benefits, including: **Increased Efficiency:** IT helps automate manual tasks, reducing time and operational costs, and improving data accuracy. **Enhanced Effectiveness:** IT enables faster and more accurate decision-making based on real-time data, improves coordination and collaboration among stakeholders in the supply chain, and increases visibility and control over product movement. **Improved Transparency:** IT enhances transparency in the supply chain, enabling product origin tracking, ensuring food quality and safety, and building consumer trust. However, the implementation of IT in agribusiness supply chain management also faces several challenges, such as: **Digital Divide:** Limited access to and skills in using IT, especially among small farmers, can hinder technology adoption. **Implementation Costs:** The costs of implementing and maintaining IT systems can pose a barrier for some agribusiness actors. **Data Security:** Data security and privacy are major concerns in IT implementation, especially in managing sensitive information such as farmer and consumer data. The implementation of IT in agribusiness supply chain management offers many benefits and opportunities to improve the performance and competitiveness of the agribusiness sector. However, efforts are needed to address the challenges faced, such as the digital divide, implementation costs, and data security, to ensure that IT can provide optimal benefits for all stakeholders in the agribusiness supply chain.

Keywords: Supply chain management
Keywords: Innovation, technology, research projects, etc.

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BREAKOUT ROOM 2 (Zoom Apps)

Molecular Characterization of *trnL-F* Gene of Endemic *Dendrobium* from Banua Botanical Garden, South Kalimantan, Indonesia

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Abstract

Banua Botanical Garden in South Kalimantan is a conservation area for a variety of rare plants, including the genus *Dendrobium*, which is one of the largest and most diverse groups in the Orchidaceae family. With more than 1,450 species, *Dendrobiums* are widely distributed in tropical and subtropical forests but are becoming increasingly rare due to deforestation, land conversion, and natural disasters. These threats make *Dendrobiums* difficult to find in the wild, so conservation efforts are urgently needed. Traditional morphological identification methods are time-consuming, as they require waiting for the plant to reach the mature phase. Therefore, molecular markers have become a good alternative for rapid and accurate species identification as they can distinguish taxa at the species level. This study uses DNA barcoding with the *trnL-F* marker to assess the genetic diversity and relationships among *Dendrobium* species in Banua Botanical Garden. Eight *Dendrobium* samples have been successfully characterized using electrophoresis, which showed nice, thick bands of 600-1000 bp in length. The results will be further analyzed using sequencing methods.

Keywords: Botanical garden, *Dendrobium*, DNA, electrophoresis, *trnL-F*

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Ethnobotany of *Artocarpus* Clan Plants by the Dayak Maanyan Tribe in East Dusun District, Central Kalimantan

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Abstract

The Maanyan Dayak tribe in East Barito Regency, Central Kalimantan, utilizes plants of the *Artocarpus* genus in their daily lives. This study focused on documenting and providing scientific data on the utilization of *Artocarpus* plants by the Dayak Maanyan community. Data were collected through semi-structured interviews with 53 informants from five villages selected by purposive sampling. The results showed that various *Artocarpus* species, such as jackfruit (*Artocarpus heterophyllus*), cempedak (*Artocarpus integer*), breadfruit (*Artocarpus altilis*), mentawa (*Artocarpus anisophyllus*), keledang (*Artocarpus lanceifolius*), and tarap (*Artocarpus odoratissimus*) are utilized as food sources (100%), building materials (43.40%), traditional medicine (33.96%), and other purposes (20.75%). The most commonly utilized plant parts are fruit (100%), stem (49.06%), rind (47.17%), leaves (39.62%), sap (13.21%), and seeds (20.75%). However, traditional knowledge regarding the use of these plants is starting to be endangered due to environmental changes, modernization, and lack of knowledge transfer between generations. Therefore, conservation efforts are needed for the *Artocarpus* genus of plants as well as the preservation of this traditional knowledge. This research is expected to contribute to the preservation of local wisdom and the development of further research in the field of ethnobotany and conservation.

Keywords: *Artocarpus*, dayak maanyan, ethnobotany, conservation.

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Gene Analysis of Waxy Local Sorghum (*Sorghum bicolor* (L.) Moench) Gunungkidul

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Abstract

Background: Pulen grain sorghum is used in most local food products in Gunungkidul Yogyakarta. Worldwide, three waxy mutant alleles have been identified in sorghum germplasm, and DNA markers for these alleles have been developed to detect and quantify waxy content in sorghum. Results: Several test sorghums used in this study contained the wxa allele, and one individual containing the wxa allele was also heterozygous for the wxc allele. No individuals had the wxb allele. Genotyping results were confirmed by analysis of amylose content. Gunungkidul local sorghum has amylose below 5%, while the new improved varieties have amylose above 15%. Conclusion: This waxy gene analysis as an initial research to determine the waxy gene content molecularly in Gunungkidul local sorghum will then be used as crossing elders to assemble new superior varieties that have higher production than Gunungkidul local sorghum from 3 tons to 5 tons /Ha, with low amylose content, will be in demand by many people as one of the local food diversification.

Keywords: Waxy gene, local sorghum, amylose

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Analysis of DNA Barcode Sequences *rbcl* and ITS in the Cultivated Maman Plant (*Cleome gynandra* L.) from Riau

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Abstract

The Maman plant (*Cleome gynandra* L.) is commonly cultivated and consumed as a fermented vegetable by the Malay Rokan community in Riau Province. Despite the potential nutritional and ethnopharmacological benefits of the Maman plant, little research has been conducted on its cultivation, and thus, scientific information regarding its classification remains limited. The aim of this study is to analyze the DNA barcode sequences of *rbcl* and ITS for the molecular identification of the cultivated Maman plant from Riau. The stages of DNA barcode sequence analysis of *rbcl* and ITS in the Maman plant include sample preparation, DNA isolation using a modified CTAB method, electrophoresis, nanodrop spectrophotometry, DNA amplification, sequencing, and data analysis using the BLASTn program and MEGA v.6 software. The molecular analysis results showed that the sequence lengths of *rbcl* and ITS DNA in the Maman plant were 839 and 672bp, respectively. Based on the phylogenetic tree reconstruction from all three of the sequence data, it can be concluded that *Gynandropsis gynandra* is the closest relative species to the Maman plant studied.

Keyword: DNA barcode, *rbcl*, ITS, *Cleome gynandra* L.

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Distribution of Tiwadak Banyu (*Artocarpus teysmannii*) in South Hulu Sungai and Central Hulu Sungai Districts, South Borneo Province

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Abstract

Tiwadak Banyu (*Artocarpus teysmannii*) is a member of the *Artocarpus* genus. The population of Tiwadak Banyu in South Borneo is decreasing over time due to land conversion. This study aims to provide data in the form of a distribution map of Tiwadak Banyu plants in South Hulu Sungai and Central Hulu Sungai districts, South Borneo. Distribution data were collected using exploratory survey and purposive sampling methods. The distribution of Tiwadak Banyu was recorded through coordinate points using GPS, then transferred to Microsoft Office Excel software to make a distribution map using the QGIS program version 3.36.3. The vegetation around the trees was also recorded using the single plot method, then compared based on location and the Summed Dominant Ratio was calculated. The results of the exploration showed that Tiwadak Banyu was distributed in 12 sub-districts, namely Kandangan, Sungai Raya, Simpur, Kalumpang, Angkinang, Haruyan, Pandawan, Labuan Amas Selatan, Barabai, Batang Alai Utara, Batang Alai Selatan, and Batu Benawa with the highest number of individuals found in South Hulu Sungai district, Kandangan sub-district. Comparative analysis of plant vegetation around trees shows that there are several differences in plant species and SDR calculations show that Sago (*Metroxylon sagu*) has the highest value.

Keywords: Conservation, endangered species, distribution, vegetation analysis.

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Identification of drought-tolerant F3 rice genotypes using phenotypic and SSR marker analysis

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Abstract

Climate change has a significant impact on the reduction of rice growth and yield. The development of drought-tolerant rice varieties is expected to be an effective strategy for drought mitigation. This study aims to identify drought-tolerant F3 rice genotypes through phenotypic and genotypic selection. A total of 120 F3 genotypes from the cross of Salumpikit x IR20 and four check varieties (IRAT 112, INPARI 39, INPARI 41 as tolerant checks, and Ciherang, IR64 as sensitive checks) were subjected to drought stress during the late vegetative phase and analyzed using SSR markers. Among the ten markers used, only RM316, RM228, RM454, RM6703, and RM11943 showed polymorphism in DNA bands between the drought-tolerant genotype Salumpikit and other genotypes. There was a positive correlation between the SSR markers and traits such as root length, chlorophyll content, stomatal conductance, leaf rolling, and grain yield. Cluster and principal component analysis (PCA) revealed that 43 tested genotypes were in the same cluster as the Salumpikit as tolerant checks. These genotypes have the potential to be developed into promising drought-tolerant lines.

Keywords: Drought tolerant, Phenotypic selection, Rice genotype, SSR markers,

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Introduction of Aquatic Plant Diversity as an educational model for phytoremediation in the Purwodadi Botanic Garden

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Abstract

Purwodadi Botanic Garden is an ex-situ plant conservation area which has five main functions, namely: conservation, research, education, ecotourism and environmental services. This article aims to measure understanding of the phytoremediation model for aquatic plants in the Purwodadi Botanic Garden. This research uses mixed methods with qualitative and quantitative approaches. Data was obtained from direct observation of aquatic plants in the garden and questionnaires from technical assistance, environmental education lectures and socialization activities. This research presents the process of introducing aquatic plants diversity over the last eight years, from manual models such as booklets, leaflets and modules, to electronic models using QR codes, websites, videos with information labels, banners and brochures. Apart from that, it also presents public perceptions regarding environmental phytoremediation technology using aquatic plants.

Keywords: Phytotechnology, Plants Diversity, Environmental Education, Botanic Garden.

Alkaloid Diversity in *Mitragyna speciosa* (Kratom) Influenced by Strain Characteristics and Geographic Source

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Abstract

Kratom (*Mitragyna speciosa*) is a Southeast Asian herbal plant that has long been traditionally used as a stimulant, analgesic, and folk medicine. The plant contains various secondary metabolite compounds, particularly alkaloids, which are responsible for its pharmacological activities. This article discusses the phytochemical diversity of kratom, with a focus on how strain-specific and regional factors influence the alkaloid composition across different Southeast Asian countries such as Indonesia, Malaysia, and Thailand. Red vein kratom strains generally have higher concentrations of the potent 7-hydroxymitragynine alkaloid compared to green and white vein variants. Green vein strains tend to have higher overall alkaloid content, including mitragynine. White vein strains typically have relatively low total alkaloid concentrations. Kratom cultivated in Indonesia (the largest producer) often exhibits higher mitragynine content compared to kratom from other Southeast Asian nations. Malaysian kratom frequently contains higher levels of 7-hydroxymitragynine than Indonesian sources. Kratom from Thailand displays highly variable alkaloid profiles depending on the specific growth region. These variations in phytochemical profiles result in differences in the psychoactive, analgesic, and stimulant effects experienced by kratom consumers. Understanding the sources of alkaloid diversity is crucial for developing standardized kratom preparations and safe dosing guidelines. This highlights the implications of kratom's phytochemical complexity for its potential therapeutic applications and risks.

Keywords: *Mitragyna speciosa* (Kratom), strain, alkaloid, pharmacology

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BREAKOUT ROOM 3 (Zoom Apps)

Administrative Sanctions to Ensure Reclamation Obligations and Coal Post-Mining Activities as An Effort to Restore Environmental Quality In Indonesia

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Abstract

Indonesia is a country rich in natural resources in the form of coal. However, the management of these natural resources has a negative impact in the form of deteriorating environmental quality, such as the failure to fulfil the obligation of reclamation and post-mining activities, as evidenced by the fact that many former mining sites have not been reclaimed. The aim of this research is to investigate and determine whether the administrative sanctions provided for in Law No. 3 of 2020 on Mineral and Coal Mining can ensure that these obligations are fulfilled. This type of research is normative legal research with a statutory approach. The results show that administrative sanctions can prevent and ensure that reclamation obligations and post-mining activities can be carried out because in these administrative sanctions there is a freeze and revocation of mining activity licences for coal mining companies in Indonesia if they do not carry out these obligations, which in this case can restore environmental quality.

Keywords: Administrative Sanctions, Coal Mining, Natural Resources , Reclamations.

A Critical Review on Job Creation Law and Its Potential Implications for Food Agricultural Land Protection

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Abstract

This study aims to conduct a critical study of Job Creation Law which may encourage food agricultural conversion land in Indonesia through a normative method using a conceptual and statute approach and utilizing secondary and primary legal materials. The results show that Job Creation Law has three problems with the food agricultural land protection, including (1) rules that facilitate food agricultural conversion land for government development projects; (2) food import policies that have an impact on reducing the utilization of food agricultural land; and (3) provisions of the Land Bank Agency do not support agrarian reform for the poor. These three problems are systemic problems that can have an impact on national food sovereignty.

Keywords: protection, food agricultural land, job creation law

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Challenges and opportunities of land degradation neutrality implementation in various countries and its implications for Indonesia: a systematic review

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Abstract

To ensure ecological sustainability, the UN launched Land Degradation Neutrality in 2015 to be implemented in all countries to create a 'land degradation-neutral world' in 2030 as an SDG 15.3 target. However, while implementing the policy, LDN went from being mandatory only in countries with dry soil characteristics, such as countries on the African continent, to being implemented in all countries based on the decision at the UN conference. Various problems range from internal country policy challenges and obstacles to various overlapping and cross-sectoral land regulations and sustainable land management issues. A systematic review is used in this paper using the PRISMA 2020 method. From a total of 344 Scopus-indexed articles from 2015 to 2023, 29 papers were found that specifically discuss the implementation of LDN. The unexpected result is that the LDN indicator fails to comprehensively describe and assess the land degradation that occurs; it only overlaps with the burden of land policy directives. This becomes information to provide the author's views regarding its application in Indonesia based on case studies in various countries. The author concludes that it will be reflected in results that are not so significant in its application compared to its first launch in 2015.

Keywords: Land Degradation Neutrality, Indonesia, Sustainable Land Management, UNCCD, Sustainable Development Goals 15

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The Impact of Green Innovation, Green Product and Eco-Efficiency on Company Performance of Indonesian Mining Sector

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Abstract

The objective of this study is to investigate the association of green innovation, green product, and eco-efficiency on company performance in the Indonesian mining sector. The sample used in this study is Indonesian-listed mining companies over the period of 2017 to 2021. Results show that green innovation and green product are positively associated with company performance. However, the association is not found in eco-efficiency. This suggests that the benefits of eco-efficiency may take longer to realize as the effect is not immediately visible over short periods. The results support the view that companies should focus more on implementing green innovation and developing environmentally friendly products while formulating long-term strategies for eco-efficiency and adopting holistic performance metrics. This approach is expected to reduce environmental impacts, contribute to sustainable development, and improve the company's reputation among stakeholders and the wider community.

Keywords—green innovation, green product, eco-efficiency, company performance, sustainability.

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Investigating The Effects Of Shape And Size Of Dimer Gold Nanoparticles On The Efficiency Of CIGS Solar Cells

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Abstract

Noble metal nanoparticles (NPs) have significant potential to enhance solar cell efficiency by increasing light scattering within the solar cells through Localized Surface Plasmon Resonance (LSPR). This research investigates the effects of the shape and size of dimer gold nanoparticles positioned within the active layers of solar cells. Computational simulations using the Finite-Difference Time-Domain (FDTD) method were employed to analyze various nanoparticle shapes, including spherical, cubic, cylindrical, and triangular prism, with sizes ranging from 40 nm to 60 nm. The results indicate that bare solar cells' short-circuit current density (J_{sc}) is 19.6 mA/cm². After embedding the nanoparticles within the active layers, the highest J_{sc} was observed with cylindrical nanoparticles of 60 nm size, achieving 30.92 mA/cm². Cylindrical nanoparticles exhibited the highest J_{sc} , followed by cubic, spherical, and triangular prism shapes. This increase is attributed to the near-field distribution and scattering of the nanoparticles, which extends the light path within the active layer. This research demonstrates that cylindrical dimer nanoparticles can significantly enhance the J_{sc} of CIGS solar cells.

Keywords: CIGS solar cells, Gold nanoparticle dimer, Localized surface plasmon resonance, FDTD, Short-circuit current density

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Utilizing Geographic Information Systems to Analyze Physical Conditions for Policy-Making in Kapuas Hulu for Sustainable Development Goals

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Abstract

The Kapuas Hulu, situated in the heart of Kalimantan, is home to the Betung Kerihun National Park and Danau Sentarum. These areas play a crucial role in mitigating global climate change. The presence of sufficient forests is essential for maintaining ecosystem balance, but forest conservation is increasingly threatened by development pressures. Therefore, development policies in Kapuas Hulu must take into account the region's physical conditions, ecological boundaries, and functional limits to achieve the Sustainable Development Goals (SDGs), particularly SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 15 (Life on Land). This study uses Geographic Information Systems with a superimpose method to analyze variables such as environmental carrying capacity, ecoregions, disaster risks, and land cover. The analysis offers guidance for more holistic and integrated policy-making. It reveals that Kapuas Hulu has ecological and functional boundaries that extend beyond its administrative limits, making it a critical buffer zone, especially due to its location at the headwaters of the Kapuas River and within the Meratus Structural Complex Mountain Ecoregion. Based on the analysis, the recommended policies prioritize improving rural and urban settlement management, reducing disaster risks, enhancing conservation area and biodiversity management, and reducing air and water pollution levels.

Keywords: GIS, Physical Conditions, Policy-Making, Kapuas Hulu

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Exploration of solar radiation utilization as an environmentally friendly energy source: potential areas on Sumba Island

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Abstract

Sumba Island faces challenges in meeting sustainable energy needs due to its dependence on fossil fuels, which negatively impacts both the environment and economy. This study aims to explore the potential of utilizing solar radiation as a renewable energy source through the development of Solar Power Plants in strategic locations across Sumba Island. The methodology used in this research involves spatial analysis through Geographic Information System and Analytical Hierarchy Process to identify optimal Solar Power Plants locations. The data analyzed include Global Horizontal Irradiance, Direct Normal Irradiance, land slope, earthquake risk, vegetation index, temperature, proximity to settlements, and road networks. The results show that East Sumba Regency has the highest potential for Solar Power Plants development with a DNI of 2,213.49 kWh/m²/year and GHI of 2,251.17 kWh/m²/year, followed by Central Sumba, Southwest Sumba, and West Sumba. Proximity to settlements and road access are key factors in determining ideal locations for Solar Power Plants. Sumba Island has significant solar energy potential, and developing Solar Power Plants in this region will support the transition towards sustainable renewable energy sources. This research demonstrates that the integration of GIS and AHP is effective in identifying and evaluating locations for solar energy development. By focusing on the strategic placement of Solar Power Plants, Sumba Island can enhance its energy sustainability, reduce its reliance on fossil fuels, and contribute to environmental conservation. The shift towards solar energy can also support local economic growth by creating green jobs and promoting energy independence.

Keyword: AHP, Solar Power Plants, Sumba Island

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Sensitivity Analysis and Optimal Funding Strategy for Catering MSMEs in Facing Raw Material Price Fluctuations to Increase Profitability

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Abstract

Micro, Small, and Medium Enterprises (MSMEs), especially in the catering sector, often face fluctuations in raw material prices which directly affect their cost structure and impact profitability. This condition is a challenge for MSMEs in managing financing optimally to maintain financial stability and business continuity. For this reason, innovation is needed in the form of schemes for sensitivity analysis and the analysis of optimal funding sources to overcome the challenges MSMEs face. The sensitivity analysis scheme is a method for evaluating changes in net profit before and after fluctuations in raw material prices from historical data on raw material prices from 2020 to 2023. This process involves calculating gross profit based on the difference between sales revenue and cost of goods sold, which is then followed by calculating profit net based on the difference between gross profit fixed costs and variable costs. Apart from that, the optimal funding source analysis scheme between debt and equity is important. In this scheme, the minimum cost of capital approach is used by calculating the Weighted Average Cost of Capital (WACC), followed by profitability analysis based on determining optimistic and pessimistic scenarios by considering the Net Present Value (NPV) and Internal Rate of Return (IRR). Based on the research results, the break-even point is obtained which states that income is equal to total costs so that MSMEs can design appropriate pricing strategies to achieve profitability. Then MSMEs, especially in the catering sector, can identify the most effective funding sources and manage financing optimally to be better prepared to face economic uncertainty, maintain financial stability, and ensure business continuity amidst changing market dynamics.

Keywords: Sensitivity Scheme, Optimal Funding Scheme, Break Even Point

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BREAKOUT ROOM 4 (Zoom Apps)

Status of pollution and carrying capacity of waters for intensive vaname shrimp cultivation on the coast of Cilacap, Indonesia

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Abstract

The Cilacap coast of Central Java has a large potential for sandland to be used as shrimp cultivation land. The development of shrimp cultivation in the region certainly has an environmental impact and sustainability of the area. Waters quality and carrying capacity are both important ecological aspects in supporting the sustainability of vaname shrimp cultivation. This study was conducted from May to July 2022, and aims to identify water quality status and analyze the carrying capacity of waters on the coast of Cilacap (namely Tegalkamulyan, Menganti, and Slarang). Analysis of water quality status was carried out using the Calculation of Pollution Index (IP), while the carrying capacity analysis was carried out using the water volume capability approach to accommodate waste. The results of the pollution index calculation stated that the location of Tegalkamulyan had an IP value of 5.0 (minor polluted), Menganti had an IP 4.1 (minor polluted), and Slarang with a value of IP 5.1 (moderately polluted). The calculation of the carrying capacity shows that the activity of vaname shrimp cultivation has exceeded its carrying capacity, where the productivity value of Vaname shrimp in 2022 reached 901,258 tons/year.

Keywords: Vaname shrimp, Pollution index, Carrying capacity, Cilacap

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Macrozoobenthos community structure in mangrove water ecosystem in Pejarakan Village, Bali, Indonesia

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Abstract

The declining structure of macrozoobenthos community is usually an indicator of ecosystem disturbance in the waters. This study aims to analyze the structure of macrozoobenthos community, which includes species composition, density, diversity index, evenness index, and dominance index in the mangrove aquatic environment and its surroundings in Pejarakan Village, Bali. This study was conducted in September 2022, January 2023, September 2023, and January 2024 with six observation stations, representing pond inlets, pond outlets, and mangrove areas. Macrozoobenthos samples were taken using Van Veen Grab and water quality measurements were carried out in situ. Data were analyzed using community structure, PCA, Bray-Curtis similarity index, and AMBI and M-AMBI. According to the study, macrozoobenthos at the research site consisted of five phyla namely Gastropoda (67,7%), Bivalvia (18,4%), Polychaeta (9,0%), Malacostraca (4,1%), Echinoidea (0,5%), and Nemertea (0,4%). The highest density was in January 2024 (289 ind/m²). The diversity index (H') was low-moderate (1.99-3.17), the evenness index (E) was high (0.69-0.96), and the dominance index (C) was low-moderate (0.13-0.38). PCA analysis showed that the distribution of macrozoobenthos was influenced by turbidity and TSS parameters. AMBI analysis shows that the dominant macrozoobenthos is general with AMBI values ranging from 0.62 to 1.29.

Keywords: Community structure, macrozoobenthos, Pejarakan mangrove.

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Population and Production Conditions in Red Junglefowl Preservation By The Community In Central Bengkulu Regency, Bengkulu Post Covid-19

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Abstract

Red junglefowl is a biological resource, and its population in nature is estimated to be decreasing. Preservation has been carried out by communities. Covid 19 has had a major impact on the world of livestock, especially poultry. This study was conducted in Central Bengkulu Regency, Bengkulu; with the aim of evaluating the condition of the population, production, and management after Covid 19. Respondents were determined using the snowball sampling method, and 29 respondents were obtained. Data were collected by observation, interviews with respondents, and filling out questionnaires; covering population, production, and management. The results showed that respondents had varying ages, education, length of maintenance, and management. The population of red junglefowl offspring was 56 chickens consisting of 12 hens (21.43%), 33 roosters (58.93%), and 11 chicks (19.64%). Productive hens are 10 chickens, average egg production is 7 eggs/hen/period, egg-laying period is 3 (three) times/year, and estimated egg production per year is 21 eggs/hen, and 100% of eggs are incubated by the hen. The average number of eggs hatched is 70%, and produces 14.7 or 15 chicks/hen/year. Conclusion, Covid 19 affects the genetic preservation of red junglefowl and causes a decrease in population, egg production, and chick production. Preservation of red junglefowl genetics after Covid 19 needs to be done by improving management (feed, reproduction, management system and maintenance).

Keywords: Covid-19, population, production, red junglefowl

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Improving Panic Disorder Classification Using SMOTE and Random Forest

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Abstract

Panic disorder is a serious anxiety disorder that can significantly impact an individual's mental health. If left undetected, this disorder can disrupt social relationships, and overall quality of life. Early detection and intervention are crucial for managing panic disorder and improving the well-being of those affected. Technology can be facilitating early detection through data-driven approaches that employ algorithms to identify patterns of behaviours or symptoms associated with panic disorder. Accurate classification of panic disorder is crucial for effective diagnosis and treatment. However, machine learning models trained on imbalanced datasets, such as those containing panic disorder patients, are prone to overfitting, leading to poor generalization performance. This study investigates the effectiveness of the Synthetic Minority Oversampling Technique (SMOTE) in addressing overfitting in panic disorder dataset classification using the Random Forest algorithm. The results demonstrate that SMOTE significantly improves the classification performance of Random Forest. By mitigating overfitting and improving generalization to unseen data, SMOTE increases accuracy by 15 percentage points. Before using SMOTE, the accuracy was 82%, and after using SMOTE it is 97%. The findings underscore the promise of SMOTE as a tool for boosting the performance of machine learning algorithms in classifying panic disorder from imbalanced data.

Keywords: Panic Disorder, Classification, Random Forest, Overfitting, SMOTE

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Hydroxyapatite/MgO Composites for Bone Applications Derived from Biowaste Pokea Clam Shells (*Batissa violacea* var. *celebensis* Von Martens 1897): Structure and Mechanical Properties

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Abstract

Hydroxyapatite (HAp) and HAp-MgO composites were successfully synthesized through a hydrothermal technique. The impact of MgO incorporation on the mechanical characteristics of HAp and its composites with 5 wt% MgO was investigated. An X-ray diffraction (XRD) was used for samples characterization and assessing their phase stabilities. The existence of MgO in the composit material was indicated by its specific peaks at 37.6° and 26.7° . Based on the IR spectra examination, the presence of medium peaks at 634 and 3572 cm^{-1} was attributed to the hydroxyl (OH-) group. The typical vibration bands of O-P-O in PO_4^{3-} of HAp referred to the intense absorption bands that appeared between 926 and 1084 cm^{-1} . Several indices, including both the hardness and compressive strength, were used to measure the mechanical characteristics of genuine HAp and its material with MgO. We found that the inclusion of MgO considerably improved HAp's mechanical characteristics and particle growth. The best mechanical properties were observed in the HAp-MgO composite sintered at 900°C with 5 wt% MgO. This composite exhibited a hardness of 30.72 VHN and a compressive strength of 3.12 MPa . The present study recommends that composites with mechanical properties are suitable for biomedical purposes.

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Analysis of the Prevalence of Sexually Transmitted Diseases Using STD Direct Flow Chip Based on Gender

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Abstract

Advances in diagnostic technology have great potential to control the spread of Sexually Transmitted Diseases (STDs). The provision of accurate and timely data needs to be done for clinical decision-making and public health interventions at large. One of them is with diagnostic technology methods such as the manual HybriSpot 12 platform along with the STD Direct Flow Chip kit which has proven to be very effective in identifying and controlling the spread of sexually transmitted diseases. This technology relies on multiplex PCR and hybridization techniques that have been proven to be able to detect a wide range of pathogens from analyzed samples and provide detailed information based on gender. This study used this method to detect as many as 11 pathogens simultaneously, including 9 bacteria and 2 viruses that cause sexually transmitted diseases. From a total of 432 patient samples in DKI Jakarta that were tested at IMOQ LAB, variable data results were obtained. A total of 88 men and 73 women were identified with a single pathogen infection, 46 men and 48 women were found to be co-infected, 120 men and 53 women showed negative results, and 4 test results in men were invalid. These results show that efficient diagnostic techniques are needed to control and overcome the spread of STDs.

Keywords: sexually transmitted diseases, molecular diagnostics, PCR, hybridization, pathogens.

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DNA Barcoding Analysis of Endemic *Dendrobium* Orchids from the Meratus Mountains, South Kalimantan, Indonesia, Based on *trnL-F* Marker

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Abstract

The Meratus Mountains of South Kalimantan, Indonesia, preserve many rare flora and fauna, one of which is the *Dendrobium* orchid. *Dendrobium* is famous for its high genetic diversity and its distribution which covers various regions in Indonesia, especially in the Meratus Mountains. However, the existence of this orchid has been rare, and some of its species are at risk of extinction due to overexploitation and land conversion. This study aimed to determine the genetic variation of *Dendrobium* from the Meratus Mountains through a DNA Barcoding marker, namely *trnL-F*. The DNA extraction process was carried out using the CTAB method, then the DNA was amplified using the PCR technique with *trnL-F* primer. The electrophoresis results show that the *trnL-F* region of *Dendrobium* has a thick and clear fragment. This indicates that the DNA is in good condition for further analysis (sequencing). The results provide important information to support the conservation efforts of rare *Dendrobium* of the Meratus Mountains in Indonesia.

Keywords: *Dendrobium*, DNA fragments, electrophoresis, genetic diversity, *trnL-F*

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Digital Technology By Actors Agricultural Sector MSMEs In The Framework Of Business Sustainability On Lombok Island, NTB.

Hulaifi

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Abstract

MSMEs in NTB are currently experiencing a positive trend because they are increasing every year. including those operating in the sector agriculture, both in the sector *on farm* and *off farm*. However, the increase in the number of MSMEs is inseparable from several problems faced, such as the development of digital technology, which has resulted in the use of smartphones and social media changing consumer behavior patterns in shopping. The purpose of this study is to analyze the use of digital technology by MSMEs in the agricultural sector on Lombok Island. Methods used in research This namely using the method quantitative, the data used in study This is the primary data obtained through observation, interviews and dissemination questionnaire. Data analysis through analysis *descriptive*, analysis multiple linear regression, assumption test classic, coefficient test determination and hypothesis testing, using SPSS. Research result show that utilization digital technology has an impact to improvement income effort. This is Can interpreted If implementation digital technology can exploited by the perpetrator MSMEs business. And increasingly tall perpetrator business in use digital technology among MSMEs actors, then will has an impact on increasing ability in utilization digital technology in every activity his efforts. The more often the MSMEs actors in utilization digital technology, will to obtain more Lots information that will be got it, good related aspect quality product, packaging products, as well as get direct desire consumers, along with openness very broad market access so that will need consumer can quick realized, so that will achieved sustainability business.

Keywords : Digital Technology, UMKM, Agriculture, Business Sustainability

BREAKOUT ROOM 5 (Zoom Apps)

Artificial Intelligence-Driven Learning for Sustainable Education: An Empirical Investigation of Learners' Perceived AI Presences in Vocational Higher Education

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Abstract

The integration of Artificial Intelligence (AI) with technology-enhanced learning platforms has the potential to improve education and presents a transformative approach to addressing educational challenges. Despite its beneficial impacts on education, concerns about students' AI literacy level has prompted empirical investigations on the perceived AI presences in connection with its usage, benefits, constraints, and associated risks in classROOM instructional practices. This study examines higher vocational students' perceptions on artificial intelligence-supported learning based on survey results. The population of this study comprises of all undergraduate students in one of higher vocational institutions in Indonesia. The data will be collected through online questionnaire survey distributed through students' class WhatsApp group. The online questionnaire consists of two main sections including demographic information and integrated construct from the Unified Theory of Acceptance and Use of Technology (UTAUT). The data will be analysed using Statistical Package for the Social Sciences (SPSS). To assess the hypotheses, Partial least squares structural equation modelling (PLS-SEM) will be employed. This empirical investigation hopefully offers valuable implications for educators, policymakers, and institutions aiming to integrate AI into their vocational education programs.

Keywords: Artificial Intelligence, education, learning, perceptions, vocational higher education.

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Development of an E-Vocabulary Module for Heavy Equipment Engineering Students: Enhancing Technical Literacy for Sustainable Innovation Aligned with SDGs

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Abstract

This research aims to develop an English e-vocabulary module as an additional resource for students of the Heavy Equipment Engineering Study Program, focusing on developing scientific and technological innovation to achieve Sustainable Development Goals (SDGs). The research used the Research and Development (R&D) method using the 4D model, which includes defining, designing, developing, and socializing the module. Data was collected through questionnaires and curriculum analysis to identify essential vocabulary and topics needed to support innovation and sustainability. The findings revealed a strong need for a specialized vocabulary resource that could enhance students' understanding of terms relevant to sustainable engineering practices. The module was validated by two experts: an English language expert, who evaluated content and linguistic accuracy, and a machine engineering expert, who assessed technical relevance and practicality. Both experts received high marks, indicating that the module is highly suitable as an additional educational tool to foster innovation and contribute to achieving the SDGs in heavy equipment engineering.

Keywords: E-Vocabulary Module, Heavy Equipment Engineering, SDGs Integration, Sustainable Engineering Education, Technical Literacy

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A Computer-Aided Design of Molecularly Imprinted Polymer for Di(2-Ethylhexyl) Phthalate Detection

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Abstract

This study attempted to analyze the molecularly imprinted polymer-graphene oxide (MIP-GO) for di(2-ethylhexyl) phthalate (DEHP) detection sensor material. Methyl methacrylate (MMA) was selected as a functional monomer for MIP from monomer screening of fifteen monomers by binding energy calculations in previous research. Further energy and geometry analyses were conducted to predict the optimum ratio between DEHP and MMA for MIP preparation. The DEHP: MMA ratio of 1:4 had high binding energy (154.8 kJ/mol) and the MIP matrix geometry provided enough space for the molecule template to release. Molecular dynamic simulations were performed on the system of DEHP:MMA: ethylene glycol dimethacrylate (EGDMA): benzoyl peroxide (BPO) of 1:4:20:1 on water, acetonitrile, and methanol as solvent. The radial distribution functions (RDF) analysis indicated the polymerization process on water could provide more desired interaction between MMA and DEHP. However, weak chemical interactions of MIP on GOs were identified from the energy binding calculations. These results suggest that MIP requires a linker or adhesive matrix to be strongly attached to GO before being applied as a sensor material for DEHP detection.

Keywords: Imprinted polymers, sensor, computational design, di(2-ethylhexyl) phthalate, graphene oxide.

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Analysis Of Heat Input In Gas Metal Arc Welding (SMAW) Based On Tensile Strength And Impact Of Environmental Improvement

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Abstract

Sustainable development is a concept that considers the needs of future generations. In the industrial field this concept has been applied such as saving energy, as well as in the field of welding. The aim of this study is welding applications by analyzing heat input on tensile strength and efforts to improve the environment for sustainability. The material used is SS400 Steel. SS400 steel is a material used for the construction of buildings and structures, industrial equipment, industrial machinery, and transportation. The method used in Gas Metal Arc Welding (GMAW) with current of 150 A and a voltage of 7.3V, then the welding time is calculated. The further stage is to determine of Heat Input and tensile testing. The welding variable uses a protective gas flow rate of 10 liters/minute and 15 liters/minute. The welding time of 10 liters/minute takes 122 seconds and 180 seconds at 15 liters/minute. Heat Input of 10 liters/minute is 0.60 KJ/mm and 0.83 KJ/mm at 15 liters/minute. The resulting tensile strength at the 10 liters/minute variation is 459.63 MPa and 15 liters/minute is 453.48 MPa. These results show that with welding that takes a shorter time and lower Heat Input, the mechanical strength (tensile strength) produced is still better, thus is one of the advantages of GMAW that can minimize Heat Input for sustainable activities such as of estimated welding time to save energy for environmental improvement

Keywords: GMAW, Heat Input, protective gas flow rate, welding time, sustainability

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Enhancing QoS with Deep Learning, A Comprehensive Literature Review on Model Optimization and Advanced Data Labeling

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Abstract

This literature review delves into the importance of optimizing deep learning and data labeling in the context of network Quality of Service (QoS) classification. Through a comprehensive analysis of 70 research publications, our findings indicate that 60% of the studies (42 out of 70) require optimization of deep learning techniques, while 67.14% (47 studies) necessitate optimization of data labeling methods. These percentages underscore significant opportunities for improvement within the field. The primary challenge in optimizing deep learning lies in the high computational complexity that many studies encounter during training and execution. Therefore, it is essential to enhance hyperparameter tuning, network design, and implement advanced techniques such as transfer learning to improve model efficiency and scalability. Additionally, addressing temporal relationships in network traffic using Long Short Term Memory (LSTM) networks is recommended to enhance model relevance. Optimizing data labeling is crucial due to class imbalance issues that arise when certain classes are underrepresented in the training data. Methods such as oversampling, undersampling, or synthetic data generation can create a balanced dataset, improving model training. Enhancing the quality and comprehensiveness of datasets, along with better labeling strategies and validation processes, ensures precision and uniformity, minimizing irrelevant information and mistakes. By prioritizing these areas, the result will be more efficient, precise, and resilient categorization systems in network QoS classification.

Keywords: Deep Learning, Optimization, QoS Classification

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Strategies to Improve LoRaWAN Performance in Multi-Communication

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Abstract

As the number of LoRa and LoRaWAN user grows, several issues will arise, including interference from adjacent devices or radio frequency spectrum, as well as data collisions with multiple active devices. Several methods have been used to avoid packet loss, such as adaptive data rate (ADR) and listen before talk (LBT), but they need to be improved significantly by avoiding collisions, ensuring reliable security, sending uplink and downlink data to a dependable LoRaWAN server, managing Frame Error Rate, Quality of Service (QoS), Over-the-Air (OTA), and other parameters. Multi-communication requires algorithms to reduce failures in the transmission process such as Packet Error Rate (PER) and Packet Lost (%).

Keywords: adaptive data rate, Frame Error Rate, LoRaWAN, Over-The-Air, Quality of Service

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Financial Services Optimization through IoT Implementation in Fintech Management

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Abstract

The rapid advancement of the Internet of Things (IoT) in various field is making rapid progress in term of devices, methods, and service such as improving security system as Cryptocurrency on Blockchain, the increasingly widespread use of IoT makes the need for powerful security techniques to avoid unwanted things, security system starting from protocols, endocrine system, and complex programming languages. Fintech is one of the most targeted targets by hackers, for this reason, a strong IoT system will ward off any from crime that attacks digital finance such as Blockchain and Ethereum. This paper comprehensively discusses the IoT security system in detail in Fintech and how to develop security system in the Internet of Things-bases Blockchain. The hope is that the future, system that built complexly in terms of using digital finance can be well-guarded with Cryptocurrency and other reliable methods.

Keywords: Blockchain, Cryptocurrency, Fintech, Internet of Things

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Analysis of Factors that Influence the Volume of Indonesian Palm Oil Exports to Countries on the Asian and European Continents

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Abstract

The agricultural sector has a very important role in the movement of the economy in Indonesia. One of the agricultural subsectors that has considerable potential is the plantation subsector. Palm oil is one of the export commodities that is quite high in Indonesia because palm oil has a fairly high role and benefits. The processed product of palm oil is palm oil (Crude Palm Oil). Based on the 2022 Indonesia Palm Oil Statistics book, Indonesia exports palm oil to several countries around the world, including China, India, Italy, Malaysia, Spain, the Netherlands, and Germany. The researcher will analyze the influence of total oil palm production, oil palm plantation area, rupiah exchange rate, and the number of population of the destination country on the volume of palm oil exports. The researcher will use Indonesia oil palm statistical data (obtained from the <https://www.bps.go.id/id>) for the period 2013 to 2022 using a sampling method using purposive sampling. The researcher will conduct data analysis using panel data regression. The panel data equation model is a combination of cross section data and time series data.

Keywords: the volume of palm oil exports, total oil palm production, oil palm plantation area, rupiah exchange rate, the number of population of the destination country

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BREAKOUT ROOM 6 (Zoom Apps)

The Effect of Soaking Time in Seawater on the Absorption Capacity of “Plasbut” Paving Block

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Abstract

Plastic as a source of pollution in coastal and beach environments has been utilized as a *matrix* in the manufacture of paving blocks. Plasbut paving blocks are paving that utilize PP plastic as a *matrix*, while sand and coconut fibers as *fillers*. The compressive strength of plasbut paving blocks is obtained at a composition of 30%Plastic: 70%Sand: 0.05%Fiber(Ani Listriyana, 2023). In this study, we will see how the effect of seawater immersion on the absorption capacity of plasbut paving blocks. With the same composition, immersion is carried out with fresh water and sea water with variations in immersion time of 3 days, 5 days, 7 days, 9 days, 11 days, 13 days and 15 days. We also measure the salinity of seawater before and after soaking. The highest absorption capacity of 13 days of fresh water immersion is 3.5% followed by 5 days of immersion which is 3.42%. While in seawater immersion, the highest absorption capacity was in 15-day immersion, which was 3.47% followed by 5-day immersion at 3.32%. While salinity increased and decreased with increasing immersion time, and the highest salinity was in 15-day immersion, which was 46 ‰.

Keyword : Plastic, Coconut Fiber, Plasbut Paving Block, Absorption, Salinity

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Operational Management and Maintenance of Watertreatment Technology as An Effort To Repair And Increase The Quality Of Processing River Water To Make It Clean

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Abstract

Water sources such as rivers, lakes, reservoirs, drainage ditches also rarely have clean quality water that is suitable for daily use by humans. The government and society continue to make efforts to control waste, disposal which results in water pollution continues to be carried out, but this very important thing for human needs is to filter, filtrate and treat water in the environment around urban areas so that it is suitable for use. Water resource management requires special management skills such as design capabilities, implementation/technical capabilities, operational capabilities, and maintenance capabilities. The problem of water treatment projects after being built based on survey results is that they have several problems such as substandard operations and less than optimal maintenance problems. Methods for improving river water quality to make it clean with operational management and water treatment maintenance. Improvements such as carrying out equipment inspections, planning operations and maintenance, and controlling and monitoring water resource processing maintenance operational activities. The results of the research show that management capabilities such as equipment monitoring results are still normal with an average motor vibration monitoring of 0.25, engine heat temperature of 49.3 and an average engine speed of 1230 rpm, equipment operation and maintenance standards are in accordance. The pH of the water after operation and maintenance reached 7.71 NTUs.

Keywords: operational, maintenance, watertreatment

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Ability Test of Taro (*Colocasia esculenta* L.) Leaves Extract to Reduce Coliform Bacteria in River Water

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Abstract

The problem of Coliform bacteria pollution in river water can be overcome by water chlorination. However, chlorine in water can cause toxic side effects. The use of phytochemicals can be an alternative disinfectant. Taro or *Colocasia esculenta* (*C.esculenta*) is a functional food plant and contains antibacterial. The purpose of this study was to determine the ability of *C.esculenta* leaves extract to reduce Coliform bacteria in river water samples. The research design used was pre and post with the control method and total Coliform analysis using the MPN (Most Probable Number) method. Qualitative phytochemical screening was also carried out on the extract and the presence of alkaloids, phenols, flavonoids, saponins, tannins, steroids, and terpenoids. The results of the study showed that *C.esculenta* leaves extract at concentrations of 60mg/L and 90mg/L could reduce MPN Coliform. Conclusion: *C.esculenta* leaves extract has the potential as an alternative disinfectant in reducing river water Coliform colonization.

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Pig Farm Liquid Waste Processing Technology and Its Utilization in Cacao Plants

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Abstract

Pig farm liquid waste can pollute the environment. Therefore, an innovation of technology is needed to process it so that it can be beneficial for plants. The main objective of this study is to apply a technology to process pig farm liquid waste and its utilization for fertilizing cocoa plants. The study was conducted in a farmer group at Petang Village, Badung Regency, Bali Province, Indonesia. The methods used were counseling, training, and application of the use of pig farm liquid waste processing results (bio-urine) at various doses to obtain the best dose for cocoa plant growth. The results of the study found that almost 90% of farmers were familiar with the fermentation technology for processing pig farm liquid waste into organic fertilizer (bio-urine). And farmers have succeeded in making bio-urine from pig liquid waste. A bio-urine dose of 600 cc/L of water is found to be the best dose for cocoa plant growth. This study confirmed the benefit of processing pig farm liquid waste using fermentation technology into bio-urine which can be used as fertilizer for cocoa plants. Applying this technology will minimize environmental pollution and support sustainable farming and animal husbandry.

Keywords: Biourine, Cocoa, Fermentation, Pig Farms, Technology

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Advancing Sustainable Textile Wastewater Management: A Bibliometric Analysis of Ecotechnology Applications

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Abstract

The textile industry, in addition to boosting the global economy, also has a negative impact with the high amount of wastewater generated from the textile production process. The difficulty of traditional methods in the treatment of complex textile wastewater is a challenge to explore innovative and environmentally friendly methods, such as ecotechnology to overcome the problem. In this paper, a bibliometric analysis of research results over the past 20 years has been carried out, with the keywords "textile wastewater", "ecotechnology" obtained 1137 scientific articles from Google Scholar and Scopus. By utilizing VOS Viewer 1.6.19 software for bibliometric analysis, this study identified a significant increase in research interest, particularly in the use of wetlands as sustainable treatment systems. The number of citations related to "constructed wetland" research was 3462 citations from 13 articles and the highest citations were obtained by China, indicating the important role of ecotechnology applications and their optimization in sustainable textile wastewater treatment. Integration of various studies through chemical, physical, biological and ecological approaches will increase the efficiency of restoration of polluted environments. The existence of research gaps in circular economy integration, underscores the need for future research to advance sustainable practices within the textile industry. Overall, it is concluded that developing wastewater treatment methods should meet broader environmental and economic sustainability goals, contributing to improved resource efficiency and environmental stewardship in the application of ecotechnology in the textile industry.

Keyword: ecotechnology, circular economy, sustainable treatment, textile wastewater, wetlands

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Scientific Approaches to Waste Management and Environmental Monitoring: Insights from Serangan Island's Pollution Issues

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Abstract

Serangan Island, located in Bali, Indonesia. Is a unique area serving diverse functions, including creative economy center, coastal zone, educational area, and an important religious site, particularly for the celebration of Kuningan Day in Bali. Additionally, Serangan Island is in close range proximity to "a 350-meter-long accumulation" of waste disposal site or landfill that has previously experienced a significant fire. However, the island faces significant environmental challenges, especially in environmental monitoring and pollution. This research aims to evaluate waste management strategies based on environmental science to support ecosystem sustainability on Serangan Island. Moreover, will also examines how waste affects soil, water, and air quality in the surrounding areas. It will also include an assessment of the mangrove areas in the region, looking at their condition and their role in maintaining ecological balance and reducing the negative effects of waste. Furthermore, the research evaluates the effectiveness of existing waste management technologies, focusing on monitoring system and their management, as well as fire risk mitigation and the role of multi-stakeholder collaboration in waste management. In addition, this research offers recommendations for advancing sustainable waste management, emphasizing technological innovation, community participation, and significantly and improve community well-being.

Keywords: Sustainability, Monitoring, Management, Strategies, Research Project.

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Integrating Hydrological Science and Environmental Geography in Post-Hydrometeorological Disaster Land Rehabilitation: A Case Study of Bedugul Baturiti, Bali

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Abstract

The research seeks to identify effective strategies in the rehabilitation of land and the environment affected by natural disasters in Bedugul-Baturiti, Bali on December 22, 2016. Environmental Geography is used to analyze human-environment interactions, focusing on soil erosion, vegetation loss, water quality degradation, and landslides triggered by flash floods. Moreover, This research explores the characteristics of Geothermal located within the study area. Which have significant impact of the environmental conditions of the affected are. The methodology of this research is adopts a comprehensive approach, incorporating field observations, evaluations of the water quality and community engagement. Field observations involve mapping and documenting areas with severe erosion, vegetations damage and the water flow. Community engagement involves working with local residents and stakeholders to gain insight into their perspectives and incorporate their knowledge into the rehabilitation process. The expected outcomes of this research include identifying effective land rehabilitation techniques using a practical community-based approach. The findings are intended to offer a sustainable framework for post-disaster land rehabilitation that can be adopted to other regions affected by similar natural disasters.

Keywords: Sustainability, Hidrometeorology, Environmental Geograph, Rehabilitation, Innovation.

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BREAKOUT ROOM 7 (Zoom Apps)

Bioactive Compounds And Anti-Microbial Properties Of Rubber Cassava Peel Against *Staphylococcus Aureus*, *Salmonella Sp*, *Vibrio Sp* And *Escherichia Coli*

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Abstract

Cassava tubers are very popular in Indonesia. Bioactive components have the potential to be natural anti-microbials. The aim of this research is to determine the characteristics of bio-active components and their inhibitory power against *Staphylococcus Aureus*, *Salmonella sp*, *Vibrio sp* and *Escherichia Coli* bacteria. The research implementation included an inhibition zone test and a test for reducing the number of *Staphylococcus Aureus*, *Salmonella sp*, *Vibrio sp* and *Escherichia Coli*, with a concentration of cassava extract and cassava leaves of 25% each. 50%, 75% and 100%. Reading of bioactive components was carried out using GC-MS. The research design was arranged in a Complete Randomized Block Design (RAKL). Differences between treatments were analyzed using the Least Significant Difference (BNT) test. The research results showed that rubber cassava extract produced the highest inhibition zone for *Escherichia Coli* bacteria, namely 13.00 mm, then *Salmonella sp* 12.78 mm, *Vibrio sp* 11.07 mm and the smallest was *Staphylococcus Aureus* 10.69 mm. The bioactive components of rubber cassava tubers are pentadecanoic acid, 14-methyl ester (70.64%); Tridecanoic acid, 12-methyl-. methyl ester (6.324%); Dodecanoic acid, methyl ester (6.13%); Sucrose (3.84); decanoic acid methyl ester (3.04%).

Keywords: Cassava, GC-MS, antimicrobial, *Salmonella sp*, *E. Coli*

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Utilization of Extrusion Techniques in Pasta Processing from Beneng Taro Flour and Durian Rind Flour

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Abstract

Beneng taro is indigenous food from Pandeglang, Banten Province that potential to be used as composite flour. Beneng taro contained 6.25% protein, 3.43% ash, 70.24% amylopectin, 2.29% crude fiber, and had the highest food fiber level than another taro (7.19%). However, utilization of talas beneng flour still limited. Durian is Indonesian local fruit that its production reaches 700.000 tons each year. Durian waste (durian rind) could be environmental problem. Durian rind contain a lot lignin, cellulose, and starch. Durian rind could be processed into flour. Extrusion is a process that uses a die in order to get a material with a constant cross-sectional cut. The die is what the material is pushed through in order to get the desired shape. Extrusion technology could made food with any shape from dough. Extrusion technique is a process in food processing technology which combines several unit operations including mixing, cooking, kneading, shearing, shaping and forming. It has advantages of low cost, sustainability, and versatility for production of wide variety of food products. Extrusion technology was a smart solution in increasing added value of local food. Pasta from beneng taro flour and durian rind flour can be accepted by the community based on taste, color, aroma, texture, overall, and can compete with pasta products on the market.

Keywords: Beneng taro, durian rind, extrusion technology, local flour

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Crisping Effectiveness For Freshness Restoration In Baby Pak Choi

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Abstract

Baby pak choi is a highly perishable leafy vegetable prone to water loss after harvesting due to rapid transpiration and respiration, leading to wilting, shrivelling, and loss of crispness. A fresh weight reduction of 3–10% can cause significant wilting, making the produce unsaleable. Small-scale postharvest handling practices often imply “crisping,” a method where leafy vegetables are rehydrated by immersion in water to restore freshness and texture. This study investigates the effectiveness of crisping on baby pak choi with slight (3% weight loss from the weight just after harvest) and severe wilting (9% weight loss) under storage conditions of 5 °C and 25 °C. Without the crisping treatment, weight loss continued, reaching 44% after 90 h. In contrast, the crisping treatment effectively restored both weight and visual quality. For slightly wilted baby pak choi, the crisping treatment restored the weight loss to 2% after 18 h at 25 °C and 10% after 54 h stored at 5 °C respectively. The degree of wilting before crisping significantly impacted the crisping’s effectiveness, with less recovery in more wilted samples. Future research will use nuclear magnetic resonance (NMR) to analyse water migration during crisping, providing deeper insights into rehydration mechanisms in leafy vegetables.

Keywords: crisping, freshness, immersion, water loss, wilting

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Induction of Embryogenic Callus Formation in Polyploid *Allium sativum* var. 'Lumbu Hijau'

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Abstract

Indonesia relies heavily on garlic for cooking and traditional medicine, but local farmers struggle to compete with imported garlic due to the size of the bulb of imported garlic bigger than local, and environmental constraints. The quality of local garlic can be improved by mutation using colchicine. The explants used are the plant's roots. Colchicine was applied with concentrations of 100ppm with time intervals of 24, 48, and 72 hours. The root tip is then induced by callus with different media. The putative polyploid callus regenerated to become a plantlet. Application of 24 hours gives a higher rate of the explant induced as a callus with a rate of 72%. The best media that can induce callus putative polyploid fastest for 4.6 weeks is K3 with a colchicine application of 72 hours. The callus from the application of 24 and 72 hours can regenerate as a plant characterized by green spots and shoots. The best media that shows the most green spots is media 15.1 with 2.03 spots. The green spot can grow as a shoot with the media MS 50% for application of 24 hours and MS12% for 72 hours.

Keywords: Garlic, colchicine, tetraploid, regeneration

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Proximate Analysis of Commercial Stunting Alleviation Foods: Nutrimora Cookies Case Study

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Abstract

Based on the Indonesian Nutrition Status Survey in 2022, the stunting rate is still high, around 21,6%. Therefore, effective prevention efforts are necessary to reduce stunting rates. A natural ingredient that has the potential to prevent stunting is *Moringa oleifera*, which is known to have a high nutritional content. This research aims to analyze the nutritional content of the commercial stunting prevention food Nutrimora, biscuits made from *Moringa oleifera*, sorghum flour, and arrowroot flour. This research methodology uses proximate analysis. The results showed that stunting biscuits for children aged under 1 year old had a water content of 4.03%, ash content of 0.46%, fat content of 38.80%, protein content of 2.96%, and carbohydrate content of 57.75%. Meanwhile, stunting biscuits for children aged over 1 year old showed a water content of 5.84%, ash content of 1.77%, fat content of 20.76%, protein content of 2.24% and carbohydrate content of 69.39%. The water, ash, and fat content has met SNI standards, while the carbohydrate and protein content has not met SNI standards. Therefore, even though this product has a high potential as a food product to prevent stunting, it needs to be reformulated to adjust the nutritional composition based on SNI standards.

Keywords: Stunting, Nutritional Content, Moringa (*Moringa oleifera*), Cookies.

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The Superior Astaxanthin Producer: Optimization of environmental factors in *Haematococcus pluvialis* 2 Stages cultivation to enhance its growth rate and astaxanthin accumulation as the strongest natural antioxidant

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Abstract

Astaxanthin is a reddish carotenoid with high radical scavenging activity and known as the strongest natural antioxidant. This pigment is widely used in various pharmaceutical industries with high selling prices. Astaxanthin can be produced naturally using *H. pluvialis*, a green freshwater microalgae. However, astaxanthin biosynthesis in *H. pluvialis* is highly dependent on oxidative stress. Therefore, this article was written to collect secondary data from previous studies through library search. Based on the research, the 2-stage cultivation method is highly recommended in producing more biomass before being given oxidative stress to synthesize astaxanthin. The environmental factors (pH, light intensity, salinity, temperature, light source, and CO₂) must be adjusted between the stages. At the beginning, the culture must be placed in optimal conditions to support its density and biomass growth. Meanwhile, at stage 2, the culture must be introduced to oxidative stress to induce astaxanthin synthesis. Based on our study, the combination of environmental factors is very effective in increasing the biomass productivity at stage 1, and oxidative stresses such as high light intensity (300 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$), red light, salinity (0.8%), and temperature (30°C) enhance Astaxanthin accumulation. Moreover, the oxidative stress given to the culture also increases the astaxanthin-related gene expression.

Keywords: 2- Stages Cultivation, Astaxanthin, Bioprospecting, Haematococcus, Oxidative Stress.

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The Role of Agricultural Science Innovation in Increasing Sustainable Food Production for Stunting Prevention in Indonesia

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Abstract

This research focuses on the role of innovation in enhancing food production and preventing stunting, a significant chronic malnutrition issue in Indonesia. Sustainable food production is crucial in addressing this challenge. Through literature reviews and case studies across various regions, this research identifies that agricultural innovations, such as the development of superior crop varieties, the application of modern agricultural technologies, and the implementation of sustainable farming systems, have substantial potential to increase agricultural productivity, improve the nutritional quality of food, and boost farmers' incomes. This study also explores the barriers faced in adopting these innovations and provides necessary policy recommendations to overcome these challenges. With integrated implementation, these innovations are expected to significantly contribute to increasing the availability of nutritious food, which in turn, can help reduce stunting rates in Indonesia.

Keywords : Agricultural innovation, food production, stunting prevention, sustainable farming, Indonesia

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Mapping Research Trends in Food Waste and Sustainable Development: A Bibliometric Analysis from 2012 to 2024

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Abstract

This research conducted a bibliometric analysis of 148 papers published between 2012 and 2024, with a total of 1,971 citations. The average citation per paper is 13.32, with h, g, and hl indices of 20, 41, and 24 respectively. This research maps a network of terms related to the topics of food waste, food consumption, and Sustainable Development Goals (SDGs), identified 11 thematic clusters. The network visualization shows the evolution of research topics from 2020 to 2024, with the focus shifting from educational technology and waste management towards leveraging advanced technologies such as blockchain and biomethane. The research density map shows areas already heavily researched and opportunities for further research on topics such as food security, clean energy, and the circular economy.

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BREAKOUT ROOM 8 (Zoom Apps)

West Sulawesi Coconut Shell Briquette Agro-Industry: Potential and Marketing Strategies for the Global Market

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Abstract

The coconut shell briquette agro-industry in West Sulawesi has considerable potential for development. So far there is only one agro-industry that processes coconut shell derivative products into briquettes. CV Hikmah Surabaya Arang has cooperation with copra farmers in Polewali Mandar Regency in fulfilling the need for shell charcoal raw materials for the production process. The potential of coconut shell raw materials in West Sulawesi needs to be identified as an opportunity to increase production capacity. Private label marketing is a business model for entrepreneurs to penetrate the global market. Future marketing challenges related to foreign politics and barriers in the product export route require a marketing strategy that is able to improve business performance and maintain sustainable business in the global market. The purpose of the study was to identify the resource potential of coconut shell raw materials and its added value into briquette products and formulate a marketing strategy for the global market. This research is a case study that deeply explores the marketing activities of the Company. The data analysis used is descriptive qualitative, value chain, and TOWS analysis.

Keywords: Coconut shell briquettes, Global market, Potential, Marketing strategy, Value added

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Optimization of Chicken Feather Waste into High-Protein Chicken Feather Meal

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Abstract

This study aims to process chicken feather waste into high-protein chicken feather meal. The processing is carried out through physical, chemical, enzymatic, and chemical methods with bases. Proximate analysis is conducted to measure the crude protein content, moisture content, ash content, crude fat content, and crude fiber content. Organoleptic tests are conducted to evaluate the physical properties of chicken feather meal (color, texture, odor). The analysis uses ANOVA and Duncan's Multiple Range Test (DMRT) with a 5% significance level, while the organoleptic data are analyzed qualitatively. The results show that the highest protein content, 50.1%, is found in chicken feather meal processed chemically with a base.

Keywords: Chicken feather waste, High-protein meal, Organoleptic test, Proximate analysis

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Transportation Optimization in the Food Industry using Interior Point OPTimizer (IPOPT) Problem Solver

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Abstract

The increasing demand for optimal solutions in food supply chains, has driven the development of advanced algorithms to address transportation problems. This study presents an innovative algorithmic approach designed to tackle the specific challenges of transporting perishable goods, which are essential for promoting sustainability in the food industry. The research aims to develop and simulate innovative solutions to nonlinear transportation problems across six distinct functional scenarios, beginning with validation of a linear transportation model involving two suppliers and 94 demand points across various cities. The study then advances to more complex nonlinear problems, applying smaller matrices (7x7 and 10x10) before extending to simulate a nonlinear problem for a 2x94 matrix. This approach is novel in its application of nonlinear functions in food supply logistics, such as perishability and variable demand, also integrating considerations for environmental impact. The problem-solving process is implemented using Python, with GLPK and IPOPT solvers employed for linear and nonlinear models. The proposed model integrates key characteristics that ensure the efficient and safe delivery of food products from suppliers to consumers and minimize waste and reduce the carbon footprint associated with transportation. The findings provide critical insights to support broader environmental stewardship and resource conservation goals.

Keywords: Food supply chains, transportation problem, innovative algorithmic approach, resource confirmation goals

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Development of Digital Smart Community in Sustainable Agriculture Practice in Indonesia.

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Abstract

Smart community development is a strategic step in anticipating the development of Society 5.0 in Indonesia. The transition process of an information society into a smart society requires appropriate policies, especially amidst the ongoing demographic bonus challenges from 2015 to 2035. The agricultural sector in Indonesia is a strategic sector that has contributed to 13% of the national GDP. In the context of sustainable agriculture which produces healthy food by environmentally on-farm practices and encourages community welfare, digital technology plays a crucial role in driving innovation adoption for sustainable agriculture practices. One of the goals is to promote knowledge-sharing processes and network strengthening through smart community development. In a case study of a poultry farming community in East Java and Central Java, sustainable on-farm practices by multi-nutrient and additive supplement implementation are facilitated by developing a smart community using digital media. This study aims to analyze how the digital smart community formed and to what extent the development of agribusiness networks can create a social entrepreneurship model. The results of this case study can serve as a recommendation for developing sustainable agriculture practice policies in Indonesia and other developing countries.

Keywords: Smart community, digital technology, sustainable agriculture

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Socio-economic Conditions of Fishermen, Fish Farmers and Fish Processors in the Fisheries Cluster Area in West Kutai Regency of East Kalimantan Province, Indonesia

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Abstract

The development of the fisheries cluster area in West Kutai Regency is part of the development policy strategy to improve the socio-economic conditions of the villages, most of whose lives depend on fisheries resources by working as fishermen, fish farmers, and processors. The fisheries cluster area is expected to become the center of people's economic development based on superior freshwater fisheries commodities in East Kalimantan Province. The research method is a case study with observations on fishing, aquaculture, and fish processing businesses with purposive sampling responses conducted in May and August 2024, in three areas namely Muara Pahu, Penyinggahan, and Jempang Districts. Observations revealed that the socio-economic conditions of village communities in the fisheries sector are still relatively underdeveloped with the characteristics of micro and small-scale businesses, traditional business technology and management, individual, family, and kinship, limited market accessibility and infrastructure.

Keywords: Development, cluster, socio-economy, fisheries, fishery commodities.

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Preference And Willingness to Pay of Consumers Against Siam Orange And Mandarin Orange In Jakarta

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Abstract

The largest Indonesian orange production is siam oranges, accounting for more than 80% of the total production of oranges in Indonesia. The imported oranges that are mostly consumed by people in Indonesia are mandarin oranges which come from China. To find out the amount of price which can be paid by consumers for orange commodities, it is necessary to evaluate what factors can affect the willingness of consumers to provide prices or pay for commodities of siam and mandarin oranges. This study aims to (1) determine consumer preferences and attributes consumer preferences for siam and mandarin oranges, (2) determine the value of WTP (Willingness to Pay) of consumers towards Siam oranges and mandarin oranges. The results, indicate that respondents prefer mandarin oranges (61%) compared to siam oranges (39%). The attributes that determine the highest value of the Siam orange are taste, size, water content, freshness, physical shape, and skin color. Meanwhile, mandarin oranges consist of taste, freshness, physical shape, skin color, size, and water content. The average WTP value for the siam oranges was IDR 22,480/kg, while the average WTP for mandarin oranges was IDR 39,985/kg.

Keywords: Consumer Preference, WTP, Oranges

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Influence Of Harvest Rice Using a Combine Machine On The Welfare Of Farm Workers in Lamongan District

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Abstract

Use of technology combine machine to support agricultural productivity give a profitable impact for owners agricultural business onfarm nor workers in the agricultural sector. Profit for entrepreneurs onfarm farming is efficiency in terms of harvest costs Because if calculated comparison cost harvesting use combine machine can save 50% compared to human labor. So as in matter time with use combine machine so time required for harvesting faster. Human labor the usually work for threshing rice At the moment change become power transport result harvest rice which has been entered into the sack. usually human labor for harvest rice calculated daily, namely 80,000 rupiah per day. whereas for power transport calculated per sack is 10,000 rupiah Which average in one day can transport until 10 sack so that one person labor can get 100.000 rupiah in several a clock a day. until with use machine combine for harvest rice so there is increase income and time efficiency for worker agricultural. This study implemeted at the company provider combine "Mentari Timur" in Lamongan Distrik. and interview to worker agricultural in Solokuro village.

keywords : Machine harvets rice , business agricultural, workers agricultural.

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The Technique for Controlling Armyworms Uses Noni Leaf Extract on Spinach Plants

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Abstract

Army snake (*Spodoptera frugiperda*) is one of the pests that attacks spinach plants. These caterpillars are hairless and are usually called army caterpillars by farmers because they attack high populations. The armyworm's life cycle can last from 32-42 days. The way this disease is transmitted is through adult butterflies or moths which leave eggs on the spinach plants they land on. Symptoms of attack on spinach plants include damaged, torn leaves, irregular holes in the leaves, and heavy damage causing the plant to only have leaf veins and leaf stems remaining. Preventive and curative controls can be carried out to stop caterpillar attacks on spinach plants. Meanwhile, for curative control, use a vegetable pesticide made from noni leaf extract mixed with trigo flour, where noni leaves contain saponins, flavonoids and polyphenols which are toxic to armyworms, so they can inhibit the growth of larvae into pupae, while saponin and flavonoid compounds can causes wilting of the nerves and damage to the spiracles which causes armyworms to be unable to breathe and eventually die. Apart from that, regular checks must also be carried out to monitor the progress of control on spinach plants after preventive and curative control has been carried out.

Keywords: Army Snake; Spinach Plants; Noni Leaves Extract; Flavonoid; Biopesticide

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BREAKOUT ROOM 9 (Zoom Apps)

Cluster Analysis of Province in Indonesia Based on Characteristics of Agricultural Sector Using Self-Organizing Maps

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Abstract

The agricultural sector plays a crucial role in Indonesia's national economic development. Data from the 2023 Agricultural Census conducted by the Central Bureau of Statistics revealed large variations in the quantity and quality of agricultural sector within different provinces. Therefore, it is necessary to apply appropriate statistical techniques, specifically cluster analysis, to group 38 provinces based on similar characteristics in the agricultural sector. Cluster analysis in this research uses Self-organizing Maps (SOM) method. Before clustering, the Principal Component Analysis (PCA) is carried out to reduce the dimensions of variables so that the data is easier to process and avoids the curse of dimensionality. The PCA results obtained two main components derived from nine agricultural sector variables. These components were subsequently utilized as input data for the clustering analysis using SOM. The SOM clustering analysis revealed that the optimum number of provincial clusters was 3, with a Davies-Boulden Index (DBI) value of 0.544 and a silhouette of 0.623. The provinces can be grouped into 3 clusters based on their average values of agricultural sector variables. Cluster 1 has a high average value of agricultural sector variables, Cluster 2 has a medium average value, and Cluster 3 has a low average value.

Keywords: agricultural sector, clustering, principal component analysis, self-organizing maps.

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Analysis of the Effect of Local Food-Based Nutritional Intervention on Stunting Dynamics in Central Kalimantan: Mathematical Modeling and Simulation Approach

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Abstract

Central Kalimantan is the 11th province with the highest stunting prevalence in Indonesia which 26,9% in 2023. The government is carried out various spesific and sensitive interventions to accelerate the reduction in stunting prevalence which is targeted to decrease to 15,38% in 2024. This study aims to analyse the dynamics of stunting in toddlers in Cantral Kalimantan with the influence of local food-based nutritional interventions through mathematical modelling and simulation. This ordinary differential equation system (ODE) model consisting of four variables: the proportion of toddlers at risk of stunting $R(t)$, the proportion of stunted toddlers $S(t)$, the proportion of toddlers who receive nutritional interventions $I(t)$. the research methods used are literature studies of scientific journals on stunting and mathematical modelling, interveiews with various OPDs that are members of the Stunting Mitigation Task Force team (TPPS) and documentation from various OPDs to obtain data on stunting and its interventions. The results of the model simulation using Python programming show that more intensive nutritional interventions with a wider scope of interventions have a positive impact on reducing stunting in toddlers in Central Kalimantan.

Keywords: stunting, mathematical modelling, model simulation, R programming

The Use of ST-DBSCAN in the Analysis of Covid-19 Spread Patterns Based on Spatio-Temporal Data

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Abstract

The spread of Covid-19 poses significant risks, necessitating strict policies and specialized plans. One of the measures that can be taken to help control the spread is accurately identifying areas with a high number of Covid-19 cases and areas with lower case numbers. This study aims to analyze the spread of Covid-19 using the ST-DBSCAN algorithm. The ST-DBSCAN algorithm was applied to Covid-19 spread data in Makassar city in August and September 2021, using spatial aspect parameters (Eps1) = 0.002, temporal aspect (Eps2) = 14, and minimum cluster members (MinPts) = 10, resulting in 78 clusters and 1639 noise points. The clusters formed through the application of the ST-DBSCAN algorithm were used to analyze patterns based on spatio-temporal aspects. The spatio-temporal patterns identified include occasional patterns and stationary patterns. The analysis results indicate that the area with the highest Covid-19 spread is in the southeastern part of Makassar city, specifically in Rappocini district, with 921 cases.

Keywords: Covid-19, Spatio-temporal Pattern, ST-DBSCAN.

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Sentiment Analysis of ChatGPT Exploration Based on Opinions on Platform X Using Naïve Bayes Algorithm

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Abstract

ChatGPT (chat generative pretrained transformer) developed by OpenAI and launched in 2021, quickly gained widespread attention for its ability to understand and generate human-like text responses. ChatGPT can handle a variety of tasks, including answering questions, solving maths problems, coding, and creating scientific articles or journals. Despite its versatility, concerns about the accuracy of responses to exploratory results of using chatGPT to perform various tasks have arisen, prompting the need for further evaluation. This research uses sentiment analysis to assess public opinion towards ChatGPT, using data from posts on the X app (formerly Twitter), accessed through the X developer API using Naive Bayes classification. Naïve Bayes classification algorithm was applied to categorise the sentiment. Findings showed that of the 3,001 posts analysed, 59.24% expressed positive sentiment, 17.56% negative, and 23.2% neutral. The Naïve Bayes algorithm achieved 79.84% accuracy in this classification task. The results indicate a generally positive public perception of ChatGPT, despite the concerns.

Keywords: Sentiment analysis, exploring chatGPT, naïve bayes, platform X.

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Road Maintenance Application for Identifying Flexible Pavement Damage Based on Deep Learning

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Abstract

Damage to roads can cause driving discomfort and even lead to potential accidents. Damage to flexible pavement layers requires special attention for repair, especially in areas with high rainfall, such as Indonesia. The identification method can be done manually or automatically. However, each method has its drawbacks: manual identification can provide accurate results but is time-consuming, labor-intensive, costly, and prone to subjectivity. Meanwhile, automatic identification using digital devices is cheaper, faster, and the data is synchronized with a central system. This research utilizes image processing technology by applying the YOLOv5 method to detect four types of damage: depressions, corrugation, potholes, and alligator cracking, with data collection using open camera, open gallery, and live detection. This application functions to determine the location of the damage and the type of damage. The test results of the road maintenance application using the Yolov5 method for detecting types of damage achieved an average accuracy of 90%.

Keywords: Application, road maintenance, flexible pavement damage, deep learning, yolov5.

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Population Projection in Bantul Regency with Malthusian Growth Model and Verhulst Growth Model

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Abstract

Population growth has positive and negative impacts in Indonesia. One of the negative impacts of high population growth is that the government will need help with regional needs related to food, housing, facilities, infrastructure, etc., if it is not balanced with quality human resources. This impact can be minimized by projecting the population and analyzing population growth trends in that region so that the government can anticipate by developing strategies to prepare for needs in that region in the next few years. In this paper, we use the Malthusian and Verhulst growth models to model population data. This paper aims to estimate the population of Bantul Regency using the Malthusian and Verhulst growth models and compare the two models. The results show that the population growth model is more accurate when using the Malthusian model.

Keywords: Bantul Regency, Malthus, population growth model, population projection, Verhulst

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Generative AI: Enhancing Student Engagement in Learning and Encouraging Lecturers to Become Effective Facilitators

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Abstract

Quality education is one of the key goals outlined in the Sustainable Development Goals (SDGs). Student engagement and teacher readiness are crucial factors in achieving this goal. However, current conventional teaching methods often show a dominance of lecturers in the learning process and minimal student participation, which is often due to a lack of knowledge and exploration of the content. This research aims to explore the extent to which Generative AI can serve as an aid for both students and lecturers in achieving better quality learning. Using a qualitative research approach, we investigated 12 respondents consisting of 9 students and 3 lecturers in a graduate-level computer science course. The learning scenario used involves lecturers providing the topic and key points that need to be understood by the students. Subsequently, students are asked to delve into the material using Generative AI, specifically ChatGPT. This AI tool is used intensively during both in-class and out-of-class learning activities, including the completion of assignments. The results of the study show that student engagement is significantly high, particularly among students with moderate and low levels of prior knowledge. Additionally, the role of lecturers as facilitators has markedly improved. Lecturers play a crucial role in preparing learning instruments and validating the quality of the generated content. The study concludes that the use of Generative AI not only enhances student engagement in the learning process but also encourages lecturers to become more effective facilitators. The integration of this technology in education can be a viable solution to improving learning quality and achieving the goal of quality education as outlined in the SDGs.

Keywords: AI, student engagement, learning, ChatGPT, effective facilitator.

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Application of Machine Learning for Predictive Maintenance in Power Transformer Health Assessment: A Comparative Study of SVM, ANN, and Random Forest

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Abstract

Electricity plays an irreplaceable role in human daily life. To meet the increasing demand for electrical energy, a reliable electrical system, such as a power transformer, is required. Power transformers hold a crucial role in the electrical power system, where the long-term reliability of the transformer is closely related to the safety and stability of the power system. Therefore, transformer maintenance must be carried out to anticipate sudden failures and ensure the overall reliability of the electrical power system. These assessments can be performed in various ways, including the Health Index and Dissolved Gas Analysis. The Duval Pentagon Method (DPM) and Duval Triangle Method (DTM) are used in Dissolved Gas Analysis to ascertain the condition of transformers. In this development, a comparison of three machine learning models—SVM, ANN, and Random Forest—was made using the DPM and DTM datasets to obtain the model with the highest accuracy. The confusion matrix was applied to each DTM and DPM method with several split ratios for training and testing sets. The splits included 90:10, 80:20, 75:25, and 60:40. The model with the highest accuracy will be implemented in a transformer maintenance information system to determine the transformer's condition. The results of the Health Index and Dissolved Gas Analysis calculations can determine the appropriate recommendations for power transformer actions.

Keywords: electrical energy, power transformer, health index, dissolved gas analysis, machine learning

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