

In Collaborating with :



PROGRAM BOOK

3rd

ITaMSA 2023

**Innovation in Technology and Management
for Sustainable Agroindustry**

-Circular Economy for Sustainable Agroindustry-



International Conference on Innovation in Technology and Management
for Sustainable Agroindustry

INTERNATIONAL PROGRAM COMMITTEE

1. Prof. Dr. Ir. Anas Miftah Fauzi, M.Eng (Bogor Agricultural University)
2. Prof. Dr-Ing. Ir. Suprihatin (Bogor Agricultural University)
3. Prof. Dr. Ir. Illah Sailah, MS (Bogor Agricultural University)
4. Prof. Dr. Ir. Muhammad Romli, MSc.St (Bogor Agricultural University)
5. Prof. Dr. Ir. Nastiti Siswi Indrasti (Bogor Agricultural University)
6. Prof. Dr. Ir. Yandra Arkeman (Bogor Agricultural University)
7. Prof. Jordan Ermilio, Ph.D. (Villanova University, Amerika Serikat)
8. Prof. Dr. Matthias Kleinke (Rhein-Waal University, Germany)
9. Prof. Tadahisa Iwata, Ph.D. (Tokyo University)

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Yulianti

Nina Ningsih

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Dr. Elisa Anggraeni, S.TP., M.Sc.

Dr. Dwi Setyaningsih, S.TP., M.Si.

Prof. Dr. Endang Warsiki, S.TP., M.Si

Conference Publication

Prof. Dr. Farah Fahma, S.TP., M.T.

Prof. Dr. Ir. Mohamad Yani, M.Eng.

Muhammad Arif Darmawan, S.TP., M.T.

Prof. Dr. Ika Amalia Kartika, S.TP, M.T.

Prof. Dr. Eng. Taufik Djatna, S.TP., M.Si.

Dr. Drs. Purwoko, M.Si

Sri Martini, S.Kom, M.Si.

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Anto Eka Nugraha, S.TP

Supriyanto, S.M

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RUNDOWN

3rd International Conference on Innovation in Technology and Management for
Sustainable Agroindustry (3rd ITaMSA) 2023
September 19 – 20th 2023

RUNDOWN 3rd International Conference on Innovation in Technology and Management for Sustainable Agroindustry (3rd ITaMSA) 2023 September, 19 – 20th 2023	
Time (GMT +7)	Tuesday, September 19 th 2023
08.00 – 09.00	Registration
09.00 – 09.50	<ul style="list-style-type: none"> • Opening Ceremony <ul style="list-style-type: none"> ✓ National anthem of Indonesia Raya ✓ Hymne IPB • Report from the Chairperson of the Organizing Committee Prof. Dr. Ono Suparno, S.TP, M.T • Welcoming address from Dean of The Faculty of Agricultural Technology Bogor Agricultural University (IPB) Prof. Dr. Ir. Slamet Budijanto, M.Agr. • Opening address from the Rector of Bogor Agricultural University (IPB) Prof. Dr. Arif Satria, S.P, MS • Keynote speech Minister for National Development Planning, Republic of Indonesia* Dr. (HC) Ir. H. Suharso Monoarfa, M.A
09.50 – 10.00	Photo Session
10.00 – 11.40	Plenary session Day I Moderator: Prof. Dr. Ir. Anas Miftah Fauzi, M.Eng
(10.00 – 10.10)	Introduction of the moderator and the invited speakers
(10.10 – 10.30)	Prof. Jordan Ermilio <i>Circular economy for sustainable agroindustry to achieve the SDGs goals</i>
(10.30 – 10.50)	Prof. Dr. Ing. Ir. Suprihatin <i>Recent conditions or research to support the circular economy in sustainable agroindustry.</i>
(10.50 – 11.10)	Dr. Colleen MacMilan <i>Fashion waste strategy</i>
(11.10 – 11.30)	Prof. Dr. Matthias Kleinke <i>Circular economy in environmental perspective for sustainable agroindustry</i>
11.30 – 12.00	Q & A
12.00 – 13.00	Lunch break
13.00 – 17.00	Parallel session
Time	Wednesday, September 20 th 2023
08.00 – 09.00	Registration
09.00 – 10.20	Plenary session Day II – 1 st round Moderator: Prof. Dr. Ir. Illah Sailah, M.S

(09.00 – 09.20)	Prof. Yukiko Enomoto, Ph.D <i>Eco-friendly material in a circular economy to achieve the SDGs goals</i>
(09.20 – 09.40)	Prof. Eriyatno <i>Bottleneck and payoffs along the value chain in reducing food loss in selected perishable horticulture commodities</i>
(09.40 – 10.00)	Cheyu Hung, Ph.D <i>Implementation and application of data science in circular economy</i>
10.00 – 10.20	Q & A 1 st Round
(10.20 – 10.40)	Naruemon Taksaudom <i>Sustainable business practices that attached importance to the environment in a circular economy perspective</i>
(10.40 – 11.00)	Dr. Irdika Mansyur <i>The development of essential oil as an implementation of one approach to the circular economy</i>
(11.00 – 11.20)	Adhyaksa Rahmat Lolotan, MBA <i>Logistics in a circular economy</i>
11.20 – 11.40	Q & A 2 nd Round
11.40 – 12.00	Closing Ceremony

KEYNOTE SPEECH

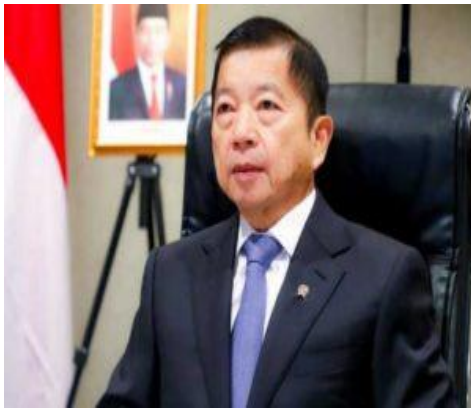
Prof. Dr. Arif Satria, S.P., M.Si. - Rector of IPB University



Prof. Dr. Arif Satria is the Rector of Institute Pertanian Bogor (IPB), or IPB University. He is a lecturer of FEMA IPB since 2010, after previously serving as a lecturer in the Department of Fisheries Social Economics. He also is an adviser to the Minister of Marine Affairs and Fisheries in 2012. Professor Arif

has been actively involved in drafting marine and fishery policies since 2002, including the Fisheries Law 31/2004, the Revision of the Law on the Management of Coastal Areas and Small Islands, the Preparation of the Blue Economic Concept as well as a number of Government and Ministerial Regulation.

Dr. (HC). Ir. H. Suharso Monoarfa, M.A- Menteri Perencanaan Pembangunan Nasional/Kepala Bappenas Republik Indonesi



Suharso Monoarfa is an Indonesian entrepreneur and politician who is the current Minister for National Development Planning Republic of Indonesia. He was appointed to this position in October 2019. He was also a member of the Presidential Advisory Council. He served as Minister of Public Housing in the Second United Indonesia Cabinet between October 2009 and

October 2011. He was also a member of the House of Representatives between 2004 and 2009 and was re-elected again in 2009.

INVITED SPEAKERS

Prof. Jordan Ermilio, Ph.D - Villanova University, Pennsylvania, USA



After earning his graduate degree in 2006, Prof. Ermilio was invited back to the College as an adjunct for the Mechanical Engineering senior design course, into which he began incorporating international service learning projects. In 2011, the College officially launched the Villanova Engineering Serving Learning program (VESL), and Ermilio was named director. What started out as two service learning projects with a dozen undergraduates has grown to hundreds of engineering students—from freshmen to PhDs—engaged with international partners in a variety of projects aimed at improving the quality of life for people in developing communities. In 2020, the College established the Center for Humanitarian Engineering and International Development and named Prof. Dr. Ermilio as director.

Prof. Dr. Ing. Suprihatin- IPB University, Indonesia



Prof Suprihatin is a full Professor at the Faculty of Agricultural Technology IPB. He was born in Klaten in 1963 and completed undergraduate education at IPB and Postgraduate Education (S2/S3), University of Stuttgart, Germany (1995); Technical University of Clausthal Germany (1999). Outside the academic field, he is active in professional associations as Deputy Chair of the Indonesian Association of Engineers Agricultural Industry Vocational Agency (BKIP-PII), Deputy Chair of the Indonesian Agro-industry Association (Agrin), and the Indonesian Agricultural Engineering Association (PERTETA).

Prof. Dr. Matthias Kleinke Rhein-Waal University, Kleve, Germany



Prof. Matthias Kleinke was born and grew up in Mark Brandenburg, he studied agriculture at the Humboldt University in Berlin and did his doctorate in agricultural engineering on a topic about the use of biomass in landscape conservation. After his research work in Berlin, Dr. Kleinke in the areas of scholarship programs and organic waste recycling at the German Federal Foundation for the Environment. His work as head of department for agricultural and forestry recultivation at the Research Institute for Post-Mining Landscapes (FIB) brought him back to Brandenburg, where he then took over the management of public waste disposal companies for years. Applied environmental research and the recycling of material flows have accompanied Prof. Kleinke's work and are still the focus of his interest today. Prof. Kleinke considers implementation-oriented cooperation with companies in the region as well as cooperation with international partners to be indispensable. Prof. Kleinke taught as a guest at many international universities and colleges, e.g. in Bangladesh, Benin, Ghana, India, Indonesia, Cameroon, Kyrgyzstan, Spain, Tanzania, Ukraine and the USA

Dr. Colleen MacMilan - CSIRO, Australia



Dr Colleen MacMillan is a researcher fascinated by plants and fibres, and their uses for renewable commodities and products. She holds a PhD in plant biology (University of Melbourne), a Graduate Diploma of Education (University of Melbourne), and has 25+ years of experience in cotton biotechnology, forest biotechnology, and fundamental plant biology, that together span multiple domains such as individual DNA molecules through to biomechanics, pan-value-chain engagement such as in textiles and fibers. Her roles in the CSIRO (Commonwealth Scientific Industrial Research Organisation - Australia's national science agency) include as a member of the Circular Economy For Missions Leadership Team, the Cotton Biotechnology Group's Fibre Quality Team Leader, and as a scientist researching cotton fibres for high-value properties using biotechnology-based approaches, to help create solutions for sustainable fibre-based industries and communities. In addition to science, Colleen has a strong commitment to inclusion of diversity and is the inaugural inclusion of diversity executive lead for CSIRO Agriculture and Forestry.

Prof. Dr. Ir. Eriyatno, MSAE. - IPB University, Indonesia



Prof. Dr. Eriyatno, MSAE is a researcher fascinated by food industrial development system, micro finance institution, policy and legal framework, and bureaucratic reformation system studies. He holds a PhD in agricultural and system engineering (Michigan State University), an agricultural mechanization (IPB University), and has 30+ years of experience in system simulation and modelling, micro-finance institution, policy research/soft system methodology, small and medium enterprises development, and business development service. His roles in the Land Administration Policy Study, World Bank Support as a chairman, Microfinance Institution Development Working Group, World Bank Support as a chairman, include as a member of ISSS (The international society for system science) and as a scientist researching microfinance institution development through strengthening saving and loan cooperative. In addition to science, Eriyatno has a strong commitment to support system for agroindustrial development strategy

Naruemon Taksaudom (Ms. Poon) - Hillkoff Innovation Center, Thailand



Naruemon Taksaudom, known as Ms. Poon is managing director of Hillkoff Innovation Center. She delegates of Chiang Mai Coffee City Cluster hold an event to deliver the pillow which is recycling from plastic straws to delegates of Chiang Mai communities.

Dr. Ir. Irdika Mansur, M.For.Sc- Chief of Indonesian Essential Oil Council



Dr. Ir. Irdika Mansur, M.For.Sc is a senior lecturer and researcher at the Department of Silviculture, Faculty of Forestry and Environment, IPB University. He holds a PhD in biosciences (University of Kent England), a School of Forestry (University of Canterbury), and has 27 years of experience conducted research on reclamation of ex-mine sites and passive treatment of acid mine drainage using constructed swamp forest. His roles in Communication Forum for Mine Environmental Management of Indonesia as an expert, Forum for Rehabilitation of Ex-mining Forest and Land as an expert and Indonesia Essential Oil Council as a chairperson. In addition to science, Irdika Mansur has a strong commitment to support transforming degraded land due to mining to productive landscape.

Adhyaksa Rahmat Lolotan, MBA- DHL Express, Singapore



Ir. Adhyaksa Rahmat Lolotan, MBA, CPP is a professional on seasoned transportation and logistics commercial. He holds master of business administration on Solvay Brussels School of Economics and Management, Universite Libre de Bruxelles, Belgium, and has 20 years of experience in Business Processes, Pricing, Revenue Management, Activity Based Costing, Revenue/Yield Management, Business Intelligence (IT) and Business Analytic. He got professional qualification on CPP (Certified Pricing Professional) from PPS (Pricing Professional Society). His roles in DHL Express Singapore as Director of Finance and HR Business Intelligence, Business Intelligence Center of Excellence, Global Business IT. In addition to the professional field, he poises to face challenges in pricing management, commercial analysis, business planning, product management, business IT and financial aspects of business to help improve the company's profitability.

Prof. Yukiko Enomoto, Ph.D - Tokyo University, Japan



Dr. Yukiko Enomoto is an associate professor at Graduate School of Agricultural and Life Sciences, The University of Tokyo. She received her Ph.D. in agricultural science from Kyoto University in 2010. After working as a researcher at The University of Tokyo, and in the national institute, Advanced Industrial Science and Technology (AIST), she has been working at a current position since 2017. The one of the main topics of her study is chemical syntheses of bio-based plastics derived from polysaccharides such as cellulose or hemicellulose. She has also been studying biodegradation of polysaccharide derivatives and other biodegradable polyesters and synthesis of other sugar based polymers. She is now focusing on synthesis of thermally stable and biodegradable bio-based aromatic polymers derived from lignin. She has received young scientist award from the Japan Wood Society in 2014 and Japan Prize in Agricultural Sciences, Achievement Award for Young Scientists in 2019.

Cheyu Hung, Ph.D.- Ming Chi University of Technology, Taiwan



Che-Yu HUNG Ph. D. is a researcher fascinated by imbalanced and missing data processing, carbon footprint verification, smart manufacturing and industrial 4.0, and data science innovation and implementation. He holds a Ph.D. in industrial management, School of Management (National Taiwan University of Science and Technology), and has 10 years of experience in data science, machine learning and data mining, project management and lean production, applied statistics, Six Sigma, and marketing research. His roles in statsoft holdings Inc. Taiwan branch as managing director, Dell Software International Inc. as sales support manager, Quest Software Inc. as sales support supervisor and as a scientist researching planning, implementation, and supervision of CFV projects entrusted by enterprises. In addition to science, Che-Yu HUNG has a strong commitment to machine learning and data science.

SCHEDULE OF PARALLEL SESSION

1. Parallel 1

Date : Tuesday (Sept 19, 2023)
 Topic : Innovative and Sustainable Agro-industry Business Model
 Moderator : Prof. Dr.Eng, Taufik Djatna, M.Si
 Notulis/MC : Anastasia Fidella Carmelita
 Host : Lolita Anggareni, S.E, M.M
 Link Zoom : <https://ipb-university.zoom.us/j/95428654049?pwd=ci9taS9lYmtpVlRabjg0dkdROUcyUT09>
 Meeting ID: 954 2865 4049
 Passcode: itamsa2023

Time (GMT +7)	Paper ID	Title and Author
13.00- 14.00	Paper_3	Situational Analysis of Human Resources Agroindustry Sugarcane Indonesia in the Industrial Era 4.0 <i>Mursiti, Illah Sailah, Marimin, Muhammad Romli, Alex Denni</i>
	Paper_4	Agro-Industrial Sustainability and Competitiveness through Business Model: A Systematic Literature Review <i>Tuti Ermawati and Ragil Yoga Edi</i>
	Paper_5	Effectiveness of Value-Added Input-Output Method in Upstream and Midstream Supply Chain Network of Sunflower Agro-industry <i>Nunung Nurhasanah, Ginang Natilla Adlina, Isna Ibnah Mudrikah, Ahmad Chirzun, Iphov Kumala Sriwana</i>
	Paper_6	Assurance of Halal Beef Products Using a Traceability System in Enterprise Resource Planning Applications <i>Adhi Kusnadi</i>
	Paper_24	Halal Supply Chain Performance Measurement Model Involving Traceability Aspects: A Study in A Chicken Slaughterhouse <i>Rahmadiani Ikhwanisa, Resista Vikaliana, Yelita Anggiane Iskandar</i>
14.00 - 15.00	Paper_11	Gen Z Perception Of Halal Supply Chain Implementation In The Cosmetic Industry <i>Dini Wahyuni, Theresia Hasian</i>

Time (GMT +7)	Paper ID	Title and Author
	Paper_13	Should Bank Provide Insurance for Horticultural Crop Damage? (A Stackelberg Game Approach) <i>Januardi, Che-Yu Hung</i>
	Paper_15	The Simultaneous Effect Of Credit On Sustainable Food Crop Production And Economic Growth Of The Agricultural Sector In Indonesia <i>Yeni Saptia and Rusnani</i>
	Paper_16	Measurement of Raw Material Inventory Performance at Halal Frozen Food Business <i>Dini Wahyuni, Mohammad Azmi Fadli, Irwan Budiman</i>
	Paper_20	Socioeconomic and technical feasibility of cajuput oil (Melaleuca cajuput Powell) distillation business <i>RN Mahmudah, B Dharmawan, and S Sujianto</i>
15.00 - 16.00	Paper_21	Strategies for Enhancing the Sustainability of Agroindustry through Technological Innovation: A Bibliometric and Thematic Analysis <i>Huda M. Elmatsani, Eko B. Susetyo, Puji Astuti, Sari Intan Kailaku, Sitti Ramlah, Noveria Sjafrina, Amos Lukas, Arief Arianto, Sahlan, S. Joni Munarso</i>
	Paper_23	Digital Technology in Agroindustry Sustainability Achievement: Bibliometric and Content Analysis <i>Noveria Sjafrina, Sari Intan Kailaku, Eko B. Susetyo, Puji Astuti, Sitti Ramlah, Amos Lukas, Arief Arianto, Sahlan, Huda M. Elmatsani, S. Joni Munarso</i>
	Paper_10	Designing Risk Mitigation Strategies for Agricultural Supply Chain: A Supply Chain Finance-Based Approach <i>A Profita, DKR Kuncoro, Muhammad Reza Baihaqi</i>
	Paper_25	Techno-Economic Analysis of Fermented Drinks from Cilembu Sweet Potatoes <i>Dia Dwi Ramadahan, Puspita Nurlilasari, Rahmat Budiarto.</i>
	Paper_26	How important is the traceability of fresh fruit according to consumers? : A Rasch Model <i>Resista Vikaliana, Raja Zuraidah Raja Mohn Rasi, I Nyoman Pujawan, Irwansyah</i>

2. Parallel 2

Date : Tuesday (Sept 19, 2023)
 Topic : Innovative and Sustainable Agro-industry Business Model
 Moderator : Prof. Dr. Ir. Marimin, M.Sc
 Notulis/MC : Muhammad Ihza Nugraha
 Host : Anto Eka, STP
 Link Zoom : <https://ipb-university.zoom.us/j/95428654049?pwd=ci9taS9lYmtpVlRabjg0dkdROUcyUT09>
 Meeting ID: 954 2865 4049
 Passcode: itamsa2023

Time (GMT +7)	Paper ID	Title and Author
13.00-14.00	Paper_29	Analysis of Transformational Leadership, Organizational Culture, and Work Stress on Employee Performance in Agroindustry <i>Ksatria Refo Harnawan Putra, Suharno, Didik Purwadi</i>
	Paper_31	Optimizing negotiation process of buyer-supplier collaboration in the Gambier supply chain <i>S Anwar, I Ekawati, D Ramadian,</i>
	Paper_34	Study on commercialization of seed new superior rice varieties in Central Kalimantan <i>Twenty Liana, Eddy Lion, Hendra Toni</i>
	Paper_35	Time Series Forecasting for Environmentally Friendly Production in Improving Tea Quality <i>Nismah Panjaitan and Clarisa Deswanti Sihombing</i>
	Paper_37	Lighting Layout Design at Cigarette Paper Packaging Station for Energy Efficiency <i>Anizar and Evi Nurliza</i>
14.00 - 15.00	Paper_38	Analysis of the Institutional Risk of the Halal Supply Chain in the Micro-Scale Potato Chips Industry Cluster Using the SCOR Method <i>Yuyun Pujiastuti, Siti Asmaul Mustaniroh, Sucipto Sucipto</i>
	Paper_39	Measures of The Success of New Product Development Process At PT XYZ <i>Nathasa Indah Paninngan, Elisa Anggraeni, Budi Agus Pranoto</i>
	Paper_41	Community development of a business ecosystem in planting media commodities (Gotthai) with One Village One CEO Program: a case study of Cianjur <i>AS Slamet, H Purwawangsa, BP Prawiro, M Isbayu, MI Irfany, Supriyanto , DA Haq</i>

Time (GMT +7)	Paper ID	Title and Author
	Paper_42	The role of the community in preserving coffee and the environment with One Village One CEO Program: a case study of Cikajang coffee farmers <i>H Purwawangsa, AS Slamet, BP Prawiro, M Isbayu, MI Irfany, Supriyanto, DA Haq</i>
	Paper_43	Existing Condition Analysis and Business Models Identification of Rice Farmer Corporation <i>Bubun Muhammad Hasbulloh, Ono Suparno, Elisa Anggraeni, Asep Taryana, Gatot Pramuhadi</i>
15.00 - 16.00	Paper_47	Procurement Planning for the Green Beans Provision of Small-Scale Agroindustry in Kalibaru Banyuwangi <i>Khotijah, Taufik Djatna, Marimin</i>
	Paper_48	Production Layout Design of Ginger Leather Candies at Sari Sehat, Bogor <i>Hartrisari Hardjomidjojo and Diaswan Rafi Fauzan</i>
	Paper_50	Conceptual agroindustry for refining nutmeg essential oil based on circular economy <i>Tanto Pratondo Utomo, Sri Hidayati, Dewi Sartika, Suharyono, Widia Rini Hartari</i>
	Paper_51	Investigation of the Supply Chain Design Process of Sustainable Shisha Briquette Production System <i>Solihin, Solihin, Erliza Hambali, Hartrisari Hardjomidjojo</i>
	Paper_53	IoT Model for Production House Control from the Development of Wetland Commodity Start-up <i>Hesty Heryani, Noor Ridha Yanti, Herry Irawansyah, Nuruddin Wiranda, Andreyan Rizky Baskara</i>

3. Parallel 3

Date : Tuesday (Sept 19, 2023)
 Topic : Innovative and Sustainable Agro-industry Business Model
 Moderator : Dr. Ir. Dwi Setyaningsih, M.Si
 Notulis/MC : Nabil Muzhaffar
 Host : Yulianti
 Link Zoom : <https://ipb-university.zoom.us/j/95428654049?pwd=ci9taS9lYmtpVlRabjg0dkdROUcyUT09>
 Meeting ID: 954 2865 4049
 Passcode: itamsa2023

Time (GMT +7)	Paper ID	Title and Author
13.00-14.00	Paper_1	Development of Biodegradable Plastic Based on Corn Starch and Cabe Jamu Extract as Natural Antioxidants <i>Nurmalisa Lisdayana</i>
	Paper_2	Molecular Docking and ADMET Studies to Investigate Antioxidant Potency of New Amides of Piper retrofractum Vahl. by Targeting Keap1 Inhibitor <i>Enung Siti Nurhidayah, Darimiyya Hidayati, Risqina Amily Habiba, Syafira Maulidya</i>
	Paper_7	Optimizing Seaweed Capsule Shell Formula with Multiple Disintegrants to Accelerate Disintegration Time <i>M Soraya, H Laksono, H Purwoto, CK Dyah, RPG Putri, I Royanti and DDP Sari</i>
	Paper_8	Closed Loop Process Development of Vegetable Oil Refinery Integration with SBE Processing and Its Application as a Source of Bioenergy <i>A Siswahyu, T Bantacut, NS Indrasti, IA Kartika</i>
	Paper_9	Green Synthesis Of Silica Nanoparticles (SNPS) From Oil Palm Boiler Ash (OPBA) And Its Application To Purification Water: A Review <i>AP Wardanu , NS Indrasti , Suprihatin and F Fahma</i>
14.00 - 15.00	Paper_12	Halochromic Polyaniline as Smart Detector Packaging for Fresh Food <i>AN Fadhila , E Warsiki and S Yuliani</i>
	Paper_17	Review: Natural Fibers for Textile Application <i>Fery Haidir Irawan, Farah Fahma, Afrinal Firmanda, Rini Purnawati, Lisman</i>
	Paper_18	Potential of Aloe Vera as A New Source of Transglutaminase <i>Cahyo Indarto, Wahyu Prihanta and Supriyanto</i>

Time (GMT +7)	Paper ID	Title and Author
	Paper_19	The potential of oil palm empty fruit bunches from Blitar Regency Indonesia as a filling material for NPK slow-release fertilizer <i>IA Dewi, F Fahma1, K Syamsu, L Suryanegara3, Y Saito4, A Munif, A Firmanda, R Purnawati</i>
	Paper_22	Enhancing Asphalt Mix Solubility with Sodium Bicarbonate Leavening in Vulcanized Rubber: A Regulatory-Compliant Approach <i>Nasrudin et al</i>
15.00 - 16.00	Paper_30	Simulation of heat transfer and pressure in counter-flow concentric tube type heat exchangers for small industrial scale <i>E Sutoyo and H A Kindi</i>
	Paper_32	Enhancing competitiveness in the Indonesian meat processing industry: a literature review <i>Yosaphat J X Wattie, Ono Suparno, Sapta Raharja, Stephen Zhang</i>
	Paper_40	Softness Indicator Made from Tapioca and Ammonium Molybdate for Avocado <i>Endang Warsiki, Adzimatunur Asfiani, Chananpat Rardniyom</i>
	Paper_45	Fractionation of Nutmeg Oil (<i>Myristica fragrans</i>) Using Spinning Band Distillation <i>Tuti Tutuarima, Erliza Noor, Meika S. Rusli, Dwi Setyaningsih, Sarifah Nurjanah</i>
	Paper_46	The effect of pressure and reflux ratio on the spinning band distillation process on the purity of myristicin isolate from the terpenless fraction of nutmeg oil <i>SF Alawiah, MS Rusli, and S Raharja</i>

4. Parallel 4

Date : Tuesday (Sept 19, 2023)
 Topic : Innovative and Sustainable Agro-industry Business Model
 Moderator : Dr. Ir. Sapta Raharja, DEA
 Notulis/MC : Manda Lavina Nathania
 Host : Sri Martini, S.Kom, M.Si
 Link Zoom : <https://ipb-university.zoom.us/j/95428654049?pwd=ci9taS9lYmtpVlRabjg0dkdROUcyUT09>
 Meeting ID: 954 2865 4049
 Passcode: itamsa2023

Time (GMT +7)	Paper ID	Title and Author
13.00-14.00	Paper_49	Ginger Leather Candy Formulation at CV Sari Sehat Bogor <i>Z Devinarahma, NA Permatasari and H Hardjomidjojo</i>
	Paper_52	The Effect Of Temperature And Packaging Of Black Garlic On Its Characteristics During Storage <i>Illah Sailah, Nikki Fauzi Nugroho, Trina E. Tallei</i>
	Paper_54	Design of Smart Food Packaging Monitoring Model Based on Chipless RFID Sensor <i>Priska Wisudawaty, Sugiarto, Taufik Djatna</i>
	Paper_55	Development of Closed Production Process Model of Virgin Coconut Oil (VCO) <i>Tajuddin Bantacut dan Muhammad Hanafi Nurfuadi</i>
	Paper_14	The Potential of Pengostemon Cablin Benth Cultivation Under Agroforestry In Tropical Dryland Areas <i>Melinda R. S. Moata, Yofris Puay, Musa Frengkianus Banunaek</i>
14.00 - 15.00	Paper_27	Environmental Sustainability Evaluation of Cocoa Husk Utilization for Silage Production: A Life Cycle Approach <i>Devi Maulida Rahmah, Januardi, Shirleen Samantha Halim, Neng Tanty Sofyana, Rahmat Pramulya, Ryozo Noguchi</i>
	Paper_28	Air Pollution Control Model In High Economic Growth Areas; A Case Study Of Dki Jakarta <i>Roy Wangintan, Moh. Yani, Hartrisari Hardjomidjojo, Tania June</i>
	Paper_36	Improving Tea Powder Production Productivity through the Implementation of Environmental Friendly Principles <i>Nismah Panjaitan, Uli Vinesa Natalia Siallagan</i>
	Paper_44	Life Cycle Sustainability Assessment of Batik Production using Natural Dyes

Time (GMT +7)	Paper ID	Title and Author
		<i>Achmad Syahid, Anas Miftah Fauzi, Andes Ismayana</i>
	Paper_33	Carbon Footprint in the Agri-Food Industry in Indonesia: An Analysis of Current Trends and Future Directions <i>Agung Hendriadi, Boni Benyamin, Ermi E Koeslulat, M Jusuf Djafar, Lanjar Soemarno, Heryoki Johanes, Agus Budiyanto, Yogi Purnaraharjo, Irpan Badrul Jamal, Mulyana Hadipernata</i>
15.00 - 16.00	Paper_56	Designing a Business Model for Start-up Development of Downstream Wetland Products Based on Design Thinking <i>Hesty Heryani, Noor Ridha Yanti, Herry Irawansyah, Nuruddin Wiranda, Andreyan Rizky Baskara</i>
	Paper_57	Product Development of Functional Drink From The Extract Of Fresh Cherry Coffee Pulp <i>Titi Candra Sunarti, Andrio P. Hasibuan, Rani Nisrina, Argama BI Manurung, Yandra Arkeman</i>
	Paper_58	Predicting the visibility of solar cell arrangement for agro-industrial watering system <i>Suherman and Marwan Al-Akaidi</i>
	Paper_59	Determining the Method of Forecasting Sales of Cheese Products at PT XYZ <i>Sugiarto, Muhammad Arif Darmawan, Muhammad Romli, Rifa Safitri</i>
	Paper_60	Design of Retort Pouch Packaging and Shelf Life Estimation for Commercial Sterilized Goat Tongseng Product by MSMEs. <i>Sugiarto, Muslich, Farah Fadhillah Widiaputri</i>

GUIDELINES FOR PRESENTERS IN PARALLEL SESSION

1. Presenters and participants of parallel sessions must be in the zoom room 10 minutes before the sessions start. The presentation schedule and link to the Zoom room can be found on the website of 3rd ITaMSA 2023.
2. Presenters and participants are required to use the *virtual background* of 3rd ITaMSA 2023. The *Virtual Backgrounds* can be downloaded at the website of 3rd ITaMSA 2023.
3. Please rename your Zoom window into **paper ID_Name** for **Presenters** and **Participants_Name** for **Participants**.
4. Participants are required to put their video ON and mute the sound except when being asked by the moderator
5. Presenters need to present within 10 minutes (maximum). The presentation will be ended by the moderator when it is over 10 minutes.
6. Questions, answers, and discussion will done after all the panelist have presented their papers.
7. Questions can be posed in the Chat Room during the parallel session.
8. A link to the attendance form will be given in the chat room during the parallel sessions
9. Presenters who are unable to present their papers at the scheduled slot will lose their opportunity to present and their papers cannot be published at the 3rd ITaMSA 2023 proceeding.
10. There will be the Student's Best Presenters Awards of the 3rd ITaMSA 2023 which will be announced at the closing ceremony of 3rd ITaMSA 2023.

ABSTRACT

3nd_ITaMSA_2023_paper_1

Development of Biodegradable Plastic Based on Corn Starch and Cabe Jamu Extract as Natural Antioxidants

Nurmalisa Lisdayana

Starch is an abundant natural polymer and we can easily find it anywhere, especially corn starch which is often found in the Madura island. Corn starch is a type of polymer that is renewable, biodegradable, cheap and potential as an alternative material for the manufacture of plastics. Conventional plastics have many problems, namely the difficulty of being decomposed naturally. Therefore, an alternative material that has good biodegradability is needed, such as corn starch. In addition to the use of corn starch which is used as a basic ingredient in the manufacture of biodegradable plastic, cabe jamu extract is also added as an antioxidant. This study aims to determine the biodegradability of biodegradable plastic with corn starch as the matrix and the addition cabe jamu extract as a natural antioxidant. Corn starch-based biodegradable plastic has excellent biodegradability and the addition of cabe jamu helps to increase the antioxidant capacity.

Keywords: Biodegradable plastic, Corn Starch, Herbal Chilli, Antioxidants.

Molecular Docking and ADMET Studies to Investigate Antioxidant Potency of New Amides of *Piper retrofractum* Vahl. by Targeting Keap1 Inhibitor

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ABSTRACT

Air pollution can cause increasing free radicals in the body. Antioxidants are important in maintaining the balance of free radicals in the body. *Piper retrofractum* Vahl. is a traditional medicinal herb from Indonesia. This study investigates the possible interactions between new amides of piper retrofractum and Keap1 inhibitor, one of the key proteins of the Keap1/Nrf2 pathway, the major system involved in redox regulation. Molecular docking study, using molecular mechanic calculations with YASARA to investigate binding energy and pkCSM to predict ADMET. Results this study showed that dipiperamides F has binding energy of 9,855 kcal/mol (closest to that of the crystallographic ligands), dipiperamides G (9,543 kcal/mol), piperodione (8,448 kcal/mol), (E)-N-cinnamoyl-2-methoxypiperidine (7,560 kcal/mol), (2E,12E)-pipertride cadienamid (7,084 kcal/mol), N-isobutyl-(2E,4E,10Z)-hexadeca-2,4,10-trienamide (6,788 kcal/mol), (R)-1-(2-oxopyrrolidin-3-yl)-5,6-dihydropyridin-2(1H)-one (6,524 kcal/mol), 2E,14Z)-N-isobutyleicosa-2,14-dienamide (5,116 kcal/mol). Visualization of receptors-ligands complex showed data on van der Waals interaction and hydrogen bonds, including hydrogen bond distances. Finally, ADMET (adsorption, desorption, metabolism, excretion, toxicity) predictions and drug-likeness properties were performed on the investigated compound. Our study indicates that new amides from *Piper retrofractum* Vahl. may behave as potential natural antioxidant agents by targeting the Keap1 inhibitor.

SITUATIONAL ANALYSIS OF HUMAN RESOURCES AGROINDUSTRY SUGARCANE INDONESIA IN THE INDUSTRIAL ERA 4.0

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ABSTRACT

The development of industrial technology 4.0 has brought new challenges to human resources as a workforce because these new technologies require new skills and competencies. The study aims to collect, evaluate, and organize information about the internal and external environment in the development of human resources in the sugarcane production process in the industrial era 4.0. This study used literature review methods, field surveys, interviews and questionnaires of 37 sugar factories in Indonesia. The results of questionnaires from 37 sugar factories obtained information, namely (1) information on human resource competencies that need to be developed is the need for the availability of competency infrastructure in the sugarcane agroindustry, (2) information on the application of industrial technology 4.0 in Indonesian sugar factories is still the low application of artificial intelligence, (3) information on the application of cane sugar production process technology is cut-load-transport technology mostly using conventional technology and (4) information the development of sugarcane land in Indonesia is West Nusa Tenggara (NTB) as an important area to be developed. Information from literature reviews, field surveys, interviews and questionnaires are combined into a comprehensive picture of the structure of human resource development in sugarcane agroindustry in the industrial era 4.0 which is outlined in the form of rich picture, root definiton, CATWOE, conceptual models, cause-and-effect diagrams, and black boxes. The description of the condition of human resources in the sugarcane agroindustry can be used as a foothold to carry out a strategy for developing sugarcane agroindustry human resources in the industrial era 4.0 to increase human resource productivity.

Keywords: human resources, industry 4.0, information, sugarcane agroindustry

Agro-Industrial Sustainability and Competitiveness through Business Model: A Systematic Literature Review

Tuti Ermawati and Ragil Yoga Edi

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ABSTRACT

The agro-industrial sector, especially the non-oil and gas processing industry, makes a significant contribution to economic growth. However, availability, quality, processing and marketing of agro-industrial products remain a challenge, so the right business model is needed to make agro-industry highly competitive and sustainable. Research on agro-industry business models has been widely conducted, but those discussing through a systematic literature approach are still limited. The purpose of this paper is to address this gap through a review of 30 Scopus journal articles on business models in the agro-industry for sustainability. Bibliometric analysis was used to make thematic observations. The results show that there are four main clusters related to the topic of agro-industrial business models, including: sustainable development, agro-industrial complex, agricultural robots and industrial economy, which are closely related to the circular economy. In conclusion, the agro-industry will be able to survive if its business model is able to adapt and embrace change. In addition, this paper provides recommendations for further research into the business model of the agro-industrial complex.

Effectiveness of Value-Added Input-Output Method in Upstream and Midstream Supply Chain Network of Sunflower Agro-industry

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ABSTRACT

Sunflower (*Helianthus annuus L*) is an annual shrub that grows up to three meters high. Sunflower agro-industry has high potential economic value. Sunflower seeds produce oil that can be extracted and used as a raw material in the food, pharmaceutical, bioenergy, and cosmetic industries. The problem is the low availability of superior local seeds, so it must be imported. The impact of imports is the low value-added. Therefore, this study aims to determine and measure the value-added of sunflowers in the upstream and midstream networks. The methods are Hayami and BPS input-output. The results of value-added on sunflower seeds, cooking oil, herbal oil, and animal feed by the Hayami and the BPS input-output each are IDR6,000 (40%) and IDR24,005,528 (20%), IDR4,900 (26%) and IDR41,377,013 (23%), IDR21,000 (60%) and IDR117,653,333 (38%), IDR3,500 (86%) and IDR23,996,000 (100%). This research also aims to identify the effectiveness of these two methods. This research has not been able to calculate the downstream network. In the future, this research will be developed by designing sustainability improvement to reduce environmental impacts; performing value-added calculations for derivative products in the downstream supply chain network; also developing a decision support system.

Assurance of Halal Beef Products Using a Traceability System in Enterprise Resource Planning Applications

Adhi Kusnadi

ABSTRACT

The assurance of "halal" products in the everyday lives of Indonesian society is guaranteed through the halal certification from the Indonesian Ulema Council (MUI). However, the potential for counterfeit logos or halal certificates has the potential to erode consumer trust and the reputation of integrity-driven manufacturers. Therefore, there is a need for an additional halal assurance that can eliminate such potential risks. This assurance comes in the form of a traceability system that can trace the origin and actors involved in the halal product supply chain. This study presents a technology innovation that focuses on the traceability of halal beef products through an Enterprise Resource Planning (ERP) application based on the MUI halal certification. Beef is chosen as the example product due to its susceptibility to counterfeiting and closed supply chains. ERP is selected as the information technology solution due to its enterprise-level management capabilities, including purchasing, inventory, manufacturing, and more. This research addresses the challenges of tracing halal beef products from upstream to downstream by integrating information technology and management to create an integrated solution that meets halal requirements and optimizes the supply chain. Analysis and demonstration show that this traceability system can track and monitor the journey of products from the producer to the consumer, validate the authenticity of each stage according to the MUI halal certificate requirements, and enable swift tracking in emergencies. The primary outcome of this research is developing an effective and efficient system that builds transparency, trust, and compliance with halal standards, thus enhancing consumer confidence. By applying the MUI halal certificate to the ERP, a platform has been successfully designed to facilitate stakeholders accessing the halal beef supply chain information. Thus, this paper provides a holistic view of the collaboration between information technology and management to offer sustainable solutions in the agro-industry. The conclusion of this study provides valuable insights for practitioners, academics, and policymakers in promoting innovation to support the sustainability of the agro-industry through the integration of halal aspects in beef product management.

Keywords: Halal certification, traceability system, consumer trust, enterprise resource planning (ERP), supply chain.

Optimizing Seaweed Capsule Shell Formula with Multiple Disintegrants to Accelerate Disintegration Time

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ABSTRACT

Seaweed-based capsule shells are gaining popularity due to their animal-free sourcing and guaranteed quality. However, these shells often suffer from prolonged disintegration time. Various studies have explored formulations with additional disintegrants like polyvinylpyrrolidone (PVP), yet results have fallen short of pharmacopeia standards. In this research, we tested multiple disintegrants and formulations to develop seaweed capsule shells with rapid disintegration time. Using primogel can fully produce a capsule shell with a promising disintegration time of around 17 minutes. Primogel also reduces the critical gel point to 48.23°C when completely replacing PVP. However, balancing desirability proved challenging, as reducing PVP led to increased disintegration time. Other disintegrants like avicel or manihot amyllum had no significant impact on disintegration time or gel point. These findings contribute to understanding the complex relationship between disintegrants and their effects on seaweed capsule shell properties.

Closed Loop Process Development of Vegetable Oil Refinery Integration with SBE Processing and Its Application as a Source of Bioenergy

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ABSTRACT

The closed cycle process is a new paradigm in resource recovery, where the output of an industry is used as the inflow of another industry. The integration of a cooking oil refinery (COR) with Spent Bleaching Earth (SBE) processing is a case study example of the application of the closed cycle process concept. SBE from COR is handled by burning it in the cement industry kiln because it is considered hazardous waste. SBE contains 17% - 40%-weight oil which can be used to produce Bioenergy. The bioenergy product produced is reused as an energy source in COR. The objective of this study is to create a process simulation that can illustrate the integration of the two industries in the joint use of resources. The integration process involves a complex network of mass and energy flows, a process simulator can help analyze the feasibility of the products produced, material and energy consumption. The study to be conducted is critical in providing a basis for COR efficiency improvement as well as the development of a closed cycle process of COR integration with SBE processing that has not existed to date.

Key Word : *Closed Loop, Integrasi, Spent bleaching earth, Bioenergy*

GREEN SYNTHESIS OF SILICA NANOPARTICLES (SNPs) FROM OIL PALM BOILER ASH (OPBA) AND ITS APPLICATION TO PURIFICATION WATER: A REVIEW

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ABSTRACT

Solid waste produced from palm oil mills is biomass that has a high organic matter content such as empty bunches, fibers, and shells. The volume will continue to increase every year as the volume of palm oil production increases. This is a concern if the waste is not handled properly, it will increase the risk of negative impacts on the environment, both the quantity of natural resources, the quality of natural resources, and the environment. Utilization of shells and fibers as boiler fuel gives many advantages in terms of reducing solid waste produced by palm oil mills, reducing emissions from the use of fossil fuels, increasing added value and energy use efficiency. Nevertheless, the use of biomass as boiler fuel results in a combustion residue in the form of oil palm boiler ash (OPBA) which is approximately 5% of palm ash. OPBA is usually unutilized or disposed, thus potentially causing environmental problems if not treated properly. An inorganic compound contained in OPBA is silica. The Silica content in OPBA has reached 42.6% in the form of SiO₂ compound. Silica has the potential to be extracted and synthesized into Silica Nanoparticles (SNPs) through process engineering which will be discussed in this paper. Silica Nanoparticles (SNPs) derived from agricultural waste/biomass or from renewable sources receive considerable interest, besides being environmentally friendly (green) also because they have unique characteristics such as larger surface area, adjustable pore diameter, excellent chemical and thermal stability, selectivity to heavy metal ions, and ease of surface modification and excellent adsorption capacity. These properties allow SNPs to be widely applied for various purposes, one of which is water purification. This paper discusses the latest advances in SNPs synthesis using OPBA, future research directions, and challenges for SNPs applications in water purification technology. The conversion of OPBA waste into SNPs is expected to be a solution in reducing palm oil waste in efforts to achieve a zero-waste and sustainable palm oil industry

Keywords: Ash, Silica, Boiler, Palm Oil, Nanoparticels, Purification Water

Designing Risk Mitigation Strategies for Agricultural Supply Chain: A Supply Chain Finance-Based Approach

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ABSTRACT

The agricultural supply chain is distinguished from the manufacturing and service supply chains by its complexity and length. These characteristics emphasize the importance of risk management measures for this supply chain, which will increase farmer income, market stability, and food security. This research aims to design risk mitigation strategies, especially demand risk, in the rice farming supply chain in Tana Paser District, Paser Regency, East Kalimantan. Monte Carlo simulation was utilized to predict the average rice demand and conduct sensitivity analysis. Three financial scheme strategies were compared: soft tolling, hard tolling, and contract farming, to assess the best strategy that provides maximum profits for agricultural supply chain actors. From the simulation results, the average predicted value for rice demand was 2.78 tonnes. The optimal quantities of q1 (processed material), q2 (raw material), and q3 (seeds) obtained from sensitivity analysis were 2.2 tons, 2 tons, and 2 tons, respectively. The soft tolling strategy provides maximum profits for all agricultural supply chain players, with a total profit of IDR 17,471,000.00, considering that implementing this strategy involves all supply chain stakeholders in determining the contract decision (q).

Gen Z Perception Of Halal Supply Chain Implementation In The Cosmetic Industry

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ABSTRACT

The halal supply chain in the cosmetic industry is a very important aspect for Muslim consumers that desire to use products that align with their religious principles. Halal supply chain encompasses every single production step, from raw materials to the final distribution of the product. Generation Z, which consists of individuals who were born in the mid-1990s until the early 2010s, has a very significant role in the cosmetic industry. This study aims to determine the factors that influence the perceptions of Gen Z when purchasing halal cosmetic products. This study was conducted by distributing questionnaires through social media such as Twitter and Instagram for Gen Z in Medan that are using cosmetic products. From the distributed questionnaire, respondents include Gen Z that are born between 1999-2009. 50 respondents were obtained which includes 20 Muslim respondents and 30 non-Muslim respondents. From the data, it is discovered that religion does not affect Gen Z's perception of purchasing halal cosmetics, although Muslim Gen Z has a higher percentage of halal cosmetics consumers compared to non-Muslim Gen Z. The data was processed by Structural Equation Modeling using SmartPLS where it would be analyzed for the value of factor loading, average variance extracted, Fornell-Larcker criterion, R-square, path coefficient, and T-statistics. These values concluded which indicators that are affected and those are the selection of raw materials on attitude, the selection of raw materials on purchase intention, the production process with consumer perceptions of halal labels, and the production process associated with attitudes.

Halochromic Polyaniline as Smart Detector Packaging for Fresh Food

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ABSTRACT

Recently, there has been an increasing interest in using smart detector packaging for fresh products. Smart detector has high sensitivity and is responsive to visual changes when exposed to pH, temperature, water activity, or composition. The advantage of using a smart detector is that it can detect and give information on which products are safe to consume and which are not. Overall, the concept of a smart detector is not much different from the function of smart packaging. Smart packaging that is sensitive to pH is called halochromic properties. The mechanism of halochromic depends on the compound or the indicator used. Polyaniline (PANI) is one of the candidates for halochromic materials, which have high stability and sensitivity to pH changes. PANI also has a high sensitivity to volatile compounds such as ammonia, indicated by a change in color from green to blue. This review will overview the use of PANI as a smart detector halochromic packaging and its potential application in the food industry. It has been found that the application of PANI has opportunities to advance the development of modern smart packaging and better food quality monitoring systems.

**Should Bank Provide Insurance for Horticultural Crop Damage?
(A Stackelberg Game Approach)**

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ABSTRACT

His study provides insight for a bank to insure farmers with the possibility of having horticultural crops damaged. Specifically, a Stackelberg leadership game is formulated with the bank as the leader and the farmer as the follower. The bank sets the insurance fee, and the farmer decides the horticulture price. The game is solved under the with and without insurance scenarios. When the probability of damage to a horticultural crop exists, it is better for the farmer to have insurance from the bank. However, the bank should give an insurance fee to the farmer with a high probability of having good horticultural crops and less customer sensitivity to damaged crops.

Keywords: Damage risk, Horticultural crop management, Insurance, Pricing decision, Stackelberg leadership game.

THE POTENTIAL OF PENGOSTEMON CABLIN BENTH CULTIVATION UNDER AGROFORESTRY IN TROPICAL DRYLAND AREAS

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ABSTRACT

Social-economic and biophysical factors like water, slope, soil organic matter, and climate may challenge dryland management. The establishment of agricultural system in semi-arid region requires a strategic plan. This study aims to comprehend the cultivation potential of *Pogostemon cablin Benth* as beneficial plant for enhancing social economic and land productivity within an agroforestry system. A survey of land suitability was conducted to support the potential cultivation of *P.C. Benth* in TTS region-Indonesia. This study discovered that land use and land cover had impacted land quality and production. Combining high-biomass plants and land conservation techniques improve the quality of the land. In the meantime, land with high plant diversity was shown to contain high levels of soil organic matter (SOM) and Corg. In addition, to boost the ecosystem services of dryland region, integrating valuable plant such as *P. C. Benth* in an agroforestry system is a potential approach for agricultural production in dryland area with limited resources. There are prospective locations for *P. C. Benth* growth in TTS. However, soil organic matter and conservation must be improved.

Keywords: land use, soil quality, agriculture

**THE SIMULTANEOUS EFFECT OF CREDIT ON SUSTAINABLE FOOD
CROP PRODUCTION AND ECONOMIC GROWTH OF THE
AGRICULTURAL SECTOR IN INDONESIA**

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ABSTRACT

In general, farmers in Indonesia are still constrained by capital in production. Therefore, credit is needed as additional capital that is expected to help increase the production of their farming business. This study aims to analyze how credit simultaneously affects the level of food crop production and economic growth in the agricultural sector. This paper's data type is secondary data in the form of time series data for 12 years (2010-2021) sourced from the BPS Statistics Indonesia and The Financial Services Authority. The data is then processed using the SAS/ETS Version 9.4 for Windows program (Statistical Analysis System/Econometric Time Series). The results showed that credit can affect the level of food crop production simultaneously with the level of economic growth of the agricultural sector and that interest rates influence credit disbursement. The implication is that credit can increase food crop production, which in turn can improve economic growth in the agricultural sector in Indonesia by lowering the interest rate and increasing the proportion of credit distribution in the farm sector.

Keywords: credit, food crop production, economic growth, agricultural sector

Measurement of Raw Material Inventory Performance at Halal Frozen Food Business

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ABSTRACT

Manufacturing companies often provide supplies of raw materials so that the production process runs smoothly. Initial observations on halal frozen food businesses that use chicken and shrimp as the main ingredients show that material procurement activities are carried out daily and materials are purchased more when prices on the market are down. The company's historical data shows a shortage of chicken raw material supplies in April due to increased demand, while raw material supplies were insufficient, and raw material prices tended to be high. This research was conducted to measure the performance of raw material inventory at halal frozen food companies using the inventory turnover rate, inventory days of supply, and fill rate methods and to calculate the optimal amount of raw material inventory with EOQ, safety stock, and reorder point (ROP). The inventory turnover rate calculation for chicken raw materials shows the best value in June 2022 of 68.35, the results of the analysis of the best inventory turnover rate for shrimp raw materials in March 2022 are 68.79. The calculation of inventory days of supply for chicken raw materials shows the best value in December 2022 of 0.98 days, calculation of inventory days of supply for shrimp shows the best value in February 2023 of 0.91 days. The fill rate is 100%. The optimal inventory calculation results for chicken raw materials (EOQ) are 1,033 Kg/order, safety stock is 40.41 Kg, and Re-Order Point is 133.67 Kg. The calculation results for shrimp raw materials are EOQ of 605 Kg/order, safety stock of 40.41 Kg, and ROP of 72.41 Kg. The research results show that inventory performance in the halal frozen food business is good.

Keywords: Inventory Performance, EOQ, Safety Stock, Reorder Point (ROP), Inventory Turnover Rate, Inventory Days of Supply; Fill rate.

Review: Natural Fibers for Textile Application

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Textile industries have a central role in the global economy, and sustainable development has become a necessity in this sector by utilizing natural, renewable, and biodegradable raw materials such as kenaf, ramie, pineapple fibers and etcetera. Science and technology continue to expand their use in the textile industry and other industries due to limitations in raw materials, environmental impact concerns, and market demands. Cellulose influences on the mechanical properties of the fibers. Meanwhile, non-cellulose materials such as hemicellulose, lignin, pectin, and wax have a role in nutrient delivery and strengthening the fibers against external threats. This review discusses various aspects related to natural fibers, and the applications as a substitute for cotton, which is the primary raw material for the textile industry. Key characteristics of natural fibers include physical, mechanical, and surface properties. These properties vary and are influenced by the chemical composition of the fibers and environmental conditions. Degumming process is a separation of fibers from the stem bark structure and can be performed through physical, chemical, and biological methods. Degumming process can combine two or three of these methods to achieve better quality of fibres and produce the desired products according to their applications in the industry.

Keywords: Natural fiber, Hemicellulose, Degumming process, Textile Application

Potential of Aloe Vera as A New Source of Transglutaminase

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Abstract

Texture is an important parameter in processed foods such as meatball, sausage and surimi, where texture is affected by the strength of the protein gel in the processed food. Phosphate compound (Sodium tripolyphosphate) is often used to improve the quality of food product gels, and even borax which is harmful to health, is still widely used to increase food texture. This study aims to explore and characterize transglutaminase of plant origin which has the potential to be developed as a substitute for gelling chemicals in food products. Animal tissue is also a source of transglutaminase but requires high costs for the supply of raw materials. While the search for sources of transglutaminase from microorganisms need many stages to ensure that transglutaminase meets safety standards, so the search for sources of plant origin is an alternative. The method in this study was to identify and characterize transglutaminase extracted from aloe vera leaves, including determining the optimum temperature, optimum pH of transglutaminase activity from Aloe vera, and also determining the molecular weight of transglutaminase. The results showed that the optimum temperature for transglutaminase from Aloe vera is 40-50 °C; The optimum pH is in the range of 6-7, and the molecular weight is 70 kDa. Unlike most transglutaminases derived from animal tissues, transglutaminase from Aloe vera is not dependent on presence of Ca²⁺. Transglutaminase activity of 3.67 U/ml is included in the high activity category, so it has a promising potential to be applied in efforts to improve the quality of the food texture.

Keywords: Aloe vera; transglutaminase

The potential of oil palm empty fruit bunches from Blitar Regency Indonesia as a filling material for NPK slow-release fertilizer

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ABSTRACT

There is a clear gap between the mechanism of slow-release fertilizer (SRF) to promote plant growth and the prominent role of nanocomposites as filler materials for SRF synthesis. However, the production source of OPEFB is considered to influence its characteristics as a filler in new materials. Therefore, we will review the potential of OPEFB from Blitar Regency, East Java Province, Indonesia as a filling material for NPK-SRF fertilizer, where NPK is one of the fertilizers with high consumption in the world and is considered to have the potential for environmental pollution. It is hoped that NPK-SRF made from OPEFB filler can improve its performance and environmentally friendly applications. The characteristics of OPEFB will provide an idea of its potential as a filler for NPK-SRF synthesis. OPEFB characteristics are based on the results of analysis of nutritional content using proximate, nutritional content using Van Soest, morphology and topography using scanning electron microscope (SEM), crystalline phase using X-ray diffraction (XRD), and chemical compound composition using Fourier transform infrared spectroscopy (FTIR) will be discussed in detail. Based on the identification from the results of this analysis, it can provide an illustration that OPEFB has great potential as a filler in NPK-SRF synthesis.

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**Socioeconomic And Technical Feasibility Of Cajuput Oil (*Melaleuca Cajuput* Powell)
Distillation Business**

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ABSTRACT

The distillation of cajuput leaves into cajuput oil is a potential business for farmers. However, farmers and distillers still encounter problems that lead to failures in developing the business, such as low yield, price volatility, and technical issues related to agro-climatology suitability, good cultivation, and distillation process. This research was conducted to obtain the socioeconomic and technical feasibility of the cajuput oil business and the information needed to support its sustainability. The research parameters used in the economic aspect include profit level analysis and Net B/C. The financial element used NPV, IRR, Payback Period, sensitivity analysis, and the non-financial aspect, including the employment, suitability of cultivated land, and cajuput oil refining. The results of the financial analysis obtained a profit of IDR 3,362,011,900, -, NPV of IDR 3,180,756,150,- a Payback Period of 6.2 years, and a Net B/C of 12.53. The company will suffer losses under the condition of selling price sensitivity of less than IDR 200,000 and a decrease in the amendment of $\geq 50\%$. The potential absorption of the on-farm and off-farm workforce reaches 2,500 workers/business unit. Land suitability becomes an essential determinant of the success of the cajuput oil business.

Strategies for Enhancing the Sustainability of Agroindustry through Technological Innovation: A Bibliometric and Thematic Analysis

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ABSTRACT

Technological innovation is a critical driver for enhancing sustainability in the agroindustry sector. This study aims to explore strategies that leverage technological innovation to improve efficiency, reduce environmental impact, and promote economic viability in agroindustry. The study will examine the impact of technological innovations on resource management, waste reduction, energy efficiency, green technology, environmental impact, and overall productivity, as well as the challenges and barriers to their implementation. Through this comprehensive analysis, the study aims to provide valuable insights and recommendations for promoting sustainability in agroindustry through technological innovation.

Enhancing Asphalt Mix Solubility with Sodium Bicarbonate Leavening in Vulcanized Rubber: A Regulatory-Compliant Approach

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ABSTRACT

In this study, sodium bicarbonate was used as a leavening agent to create air voids in the rubber vulcanized matrix. The air cavities formed will increase the solubility of rubber vulcanizate in the hot asphalt mixture. 4 and 5 per hundred rubber (phr) sodium bicarbonate were added to each rubber compound using an open mill. The rubber compound was then vulcanized at 130°C for 15 minutes. Rubber vulcanizate is produced from 4 and 5 phr sodium bicarbonate, each added at 8% to a hot asphalt solution. As a comparison material to determine the performance of sodium bicarbonate, a rubber compound formula was prepared without using sodium bicarbonate. From the test results, it was found that the AK-01 sample containing sodium bicarbonate at 4 phr had several characteristics that met the requirements of Indonesian rubber asphalt regulations, including a softening point of 59.7°C, kinematic viscosity at 135°C of 828 cSt, elasticity after recovery of 30%, storage stability, a softening point difference of 2.2°C, and elasticity after return of the TFOT residue test of 40%.

Keywords: air cavity, natural rubber, rubber asphalt, sodium bicarbonate, vulcanized rubber

Digital Technology in Agroindustry Sustainability Achievement: Bibliometric and Content Analysis

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ABSTRACT

The utilization of digital technology can potentially improve the efficiency of the operations in agroindustry and promote sustainable development. In this paper, we conduct a bibliometric and content analysis of the existing literature on the application of digital technology in regard of sustainable agroindustry. We extracted 403 papers from Scopus and Web of Science database with the average of 11.85 citations per document. There has been a significant increase in research on this topic in recent years (annual publication growth rate of 40.5%). The most recent papers focused on blockchain, machine learning, and Internet of Things (IoT) and discuss their relation to the issues of digital agriculture and Sustainable Development Goals, and we selected these papers for content analysis. Our findings suggest that these digital technologies are crucial in promoting sustainable development in agroindustry, but further actions needed to be implemented to ensure the sustainability of agroindustry. We identify several specific areas for future works, including the urgency for more robust collaboration between researchers and practitioners, and how digital technology can promote better transparency and traceability in agroindustry supply chains.

**Halal Supply Chain Performance Measurement Model Involving Traceability Aspects:
A Study in A Chicken Slaughterhouse**

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ABSTRACT

Based on the report released by the Halal Market 2020/2021 shows that the total consumption value of halal products in Indonesia from all sectors, the food and beverage sector is the highest. This case increases public awareness of the halalness of a product and causes it to demand more information about the halalness of a product. Therefore, it is necessary to have halal traceability to ensure the transparency of a product. Halal traceability is an activity to trace or track the halal status of a product. PT Sreeya Sewu is a Chicken Slaughterhouse company that has implemented halal traceability with halal blockchain in its company. This study aims to design supply chain performance indicators (KPI) that involve traceability aspects. KPIs will be designed using SCOR model, then 12 KPIs will be identified and validated. The validated KPIs will be weighted by pairwise comparisons using AHP. As the results, the highest weight of KPI is KPI-02 The percentage of halal training with 0.533 and the lowest weight is KPI-10 Cycle time for item trace with 0.076.

Techno-Economic Analysis of Fermented Drinks from Cilembu Sweet Potatoes

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ABSTRACT

This drink made from Cilembu sweet potato is one of the products produced through a fermentation process. According to the MUI agreement, food and drinks that contain alcohol must remain below 0.5%. Therefore, food or beverage products that have an alcohol content exceeding 0.5% are considered prohibited for consumption and are included in the category of haram. In the production of this beverage, a sample of Cilembu sweet potato extract that had been fermented for 12 hours was taken and the alcohol content (%) was measured using an alcohol refractometer. If the alcohol content has reached 0.2%, then it is continued with a cleaning process 3 times periodically for 3 days using halal gelatin (cow bone) which also aims to slow down the process of increasing the alcohol content. Measurement of alcohol content is carried out periodically every 24 hours for 20 days. The results of the production show that the liquid fermentation drink from Cilembu sweet potato has an alcohol content of 0.2% until the 12th day and then rises to 0.4% until the 17th day and 0.6% until the 20th day. According to the fatwa MUI that the fermented drink produced from Cilembu sweet potato is still categorized as a halal drink with an alcohol content below 0.5% for 17 days of fermentation

**How important is the traceability of fresh fruit according to consumers? :
A Rasch Model**

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ABSTRACT

This research aims to determine consumer acceptance or perception of the importance of traceability in agribusiness commodities, especially fresh fruit. The instrument used is a questionnaire. Rasch modeling was used with a survey method of 322 respondents taken by accidental sampling. The results of the analysis show a value of +1.62 logit, which is above the average logit item (+0.00 logit). These results indicate respondents' agreement on the importance of traceability in fresh fruit commodities. The score that was most difficult for respondents to agree on on the questionnaire instrument was "The halal traceability system allows market expansion". Meanwhile, the item "Traceability system increases consumer confidence" was the most approved item.

Environmental Sustainability Evaluation of Cocoa Husk Utilization for Silage Production: A Life Cycle Approach

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ABSTRACT

Cocoa is one of the strategic plantation commodities in Indonesia, which has extensive production. Indonesia is the fourth largest cocoa producer in supplying the world's cocoa demand. The extensive cocoa production in upstream continuously increases the cocoa husk waste. The utilization of cocoa husk is still limited as animal feed and raw material to produce compost. However, in many cases, the cocoa husk is left to rot around the plantation area without further utilization. This study aims to identify the cocoa husk utilization for silage production. The Life cycle assessment is used to identify the environmental impact of silage production for animal feed by utilizing the cocoa husk. The result indicated that utilizing the cocoa husk for the silage production compared with the instant concentrate and traditional animal feed showed a positive impact on reducing the CO₂ emission. Therefore, the utilization of cocoa husk for silage production is recommended to be applied. The utilization of husks in silage for animal feed is predicted to provide added value in both environmental and economic aspects. Integrating cocoa production with silage production from cocoa husk and the livestock business can promote a circular economy in cocoa industry sectors.

AIR POLLUTION CONTROL MODEL IN HIGH ECONOMIC GROWTH AREAS; A CASE STUDY OF DKI JAKARTA

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ABSTRACT

Ambient air quality is subject to easy changes in its quality. The intensity of these changes is influenced by the interaction between various pollutants released into the ambient air and meteorological factors such as air temperature, humidity, wind speed and direction, rainfall, and solar radiation. With the presence of meteorological factors such as sunlight, humidity, and temperature, primary pollutants emitted from a source undergo various physical and chemical reactions. Due to wind forces, pollutants will disperse following the wind direction. One important aspect in the concept of air quality management and air pollution control is the implementation of ambient air quality monitoring. Continuous and real-time monitoring of ambient air quality using automated monitoring equipment, also known as the Air Quality Monitoring System (AQMS), is one way to provide consistent information to the public regarding air quality at specific locations and times. Therefore, the placement of ambient air quality monitoring points takes into consideration meteorological factors (wind direction and wind speed) as well as geographical factors such as topography and land use. Wind direction and wind speed are presented in the form of windrose data diagrams, which provide an overview of wind occurrences at specific speeds from various directions, percentage of wind speeds, minimum and maximum wind speeds. This wind rose displays wind speed distribution in units of knots and m/s. The research results show that the highest PM_{2.5} analysis exceeding the quality standard occurred at DKI Station with a concentration. The highest SO₂ concentration occurred at DKI Station 2 with a concentration, the highest CO concentration at DKI Station 3 with a concentration, while the highest NO₂ concentration occurred at DKI Station 1 with a concentration. The comparative study of ambient air quality data analysis represents the characteristics of the placement of Air Quality Monitoring System (AQMS) in relation to the concentration and dispersion of air pollutants.

Key words: ambient air, AQMS, windrose, air quality monitoring system.

Analysis of Transformational Leadership, Organizational Culture, and WorkStress on Employee Performance in Agroindustry

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ABSTRACT

Agro-industry has proven to be able to survive various challenges including covid 19. This is certainly the performance of workers as one of the important factors. Employee performance is one of the factors that determine the success indicators of a company. There are several variables that affect employee performance, namely transformational leadership, organizational culture and work stress. This study aims to analyze the effect of transformational leadership, organizational culture, and work stress on the performance of the IJS company's employees. This research was conducted to collect data using purposive sampling technique to employees. The number of respondents taken as a sample of 67 people. Data analysis was performed using multiple linear regression method with transformational leadership, organizational culture, and job stress as independent variables and employee performance as the dependent variable. Based on the research conducted, the results showed that the variables of transformational leadership and organizational culture had a significant positive effect on employee performance, while work stress had no significant effect. The biggest influence contribution that affects employee performance is the transformational leadership variable with a regression coefficient of 0.420.

Keywords: employee performance, transformational leadership, organizational culture, work stress, fisheries company

Simulation Of Heat Transfer And Pressure In Counter-Flow Concentric Tube Type Heat Exchangers For Small Industrial Scale

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ABSTRACT

A Heat exchanger is a tool in industry which aims to transfer energy from hot fluid to cold fluid. The amount of heat transferred is an important parameter of the design and performance of heat exchangers. Concentric tube is a type of heat exchanger that is widely used in industries such as material processing and food preparation. One way to get the value of heat transferred before manufacturing a heat exchanger is to carry out computational fluid dynamic simulations. This simulation will make it easier for us to understand the heat transfer phenomenon that occurs from hot fluid to cold fluid. The aim of this study is to calculate how much heat transfer and pressure drop there is in a laboratory scale cocentric tube type heat exchanger. We also get a picture of the pressure drop that occurs due to fluid friction with the inner pipe walls. Experiments and simulations carried out in this study will then be validated. Variations in flow rate on the tube and shell sides are applied. the greater the flow rate, the greater the transfer of heat. The same trend is shown by variations in pressure. The greater the pressure, the greater the pressure drop that occurs. In this study, the pressure drop from the heat exchanger inlet to the heat exchanger outlet was 0.015%.

Keyword : Computational fluid dynamic, Heat exchanger, pipe,

Optimizing negotiation process of buyer-supplier collaboration in the Gambier supply chain

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ABSTRACT

Collaboration among the involved parties may influence the performance of supply chain system. The negotiation process is a part of collaborative efforts that determine the profits received by those parties. From the negotiation process stage, the problem of profit distribution among parties in the gambier supply chain could be analyzed. This study analyses the negotiation process of supplier and buyer collaboration in the gambier supply chain. The optimization of negotiation process is performed by deploying the mathematical programming approach. The negotiation mechanism consists of several steps carried out by supplier and buyer in a decentralized supply chain system. As found in the gambier supply chain, the buyer leads the negotiation process. This study found the optimal solutions that optimize profit for supplier and buyer in the gambier supply chain. Furthermore, the managerial implications of the developed models are also provided.

Keywords: Gambier supply chain, mathematical programming, negotiation, optimization, buyer-supplier collaboration

**Enhancing Competitiveness In The Indonesian Meat Processing Industry:
A Literature Review**

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ABSTRACT

Food security and the provision of high-quality food are critical for Indonesia's burgeoning population, as mandated by Law No. 18 of 2012. The meat processing sector, especially in livestock products, holds a strategic position in the National Industrial Development Master Plan (RIPIN) 2015–2035. Increased incomes, evolving consumption patterns, and modern retail expansion have fueled the demand for processed meat products in Indonesia. Nevertheless, challenges such as low meat consumption and reliance on imported raw materials necessitate a comprehensive strategy to enhance competitiveness, stimulate consumption, and address nutritional concerns. This literature review explores global strategies employed to boost competitiveness in the meat processing industry. These strategies encompass forming alliances, adhering to food safety regulations, streamlining supply chains, bolstering domestic market infrastructure, and advancing halal food production. The Industrial Competitiveness Index (ICI), encompassing profitability, productivity, and growth parameters, is employed to assess competitiveness. Strategies are devised via SWOT analysis and prioritized using the Analytic Hierarchy Process (AHP). This comprehensive approach, integrating quantitative analysis with qualitative insights, is essential for ensuring competitiveness of Indonesia's meat processing industry within the dynamic global landscape. It promotes long-term growth and stability, aligning with the nation's food security objectives and the aspirations of its growing population.

Carbon Footprint in the Agri-Food Industry in Indonesia: An Analysis of Current Trends and Future Directions

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ABSTRACT

The agri-food industry in Indonesia plays a crucial role in socio-economic development. It contributes 37.77% of the Gross Domestic Product (GDP) of the non-oil and gas processing industry sector. However, the agri-food industry contributes to greenhouse gas (GHG) emissions of about 10-12% of total anthropogenic greenhouse gases. It is predicted to increase, along with food consumption needs. These GHG emissions contribute to climate change and threaten the food industry's sustainability. This study aims to analyze the current trends and future direction of the carbon footprint in the agri-food industry, identify the key drivers of greenhouse gas emissions in the agri-food supply chain, and propose future recommendations for research and policy in reducing the carbon footprint of the agri-food industry in Indonesia. Combining a review of existing literature and an analysis of publicly available data, we found an increasing trend of greenhouse gas emissions from the agri-food industry in Indonesia for over 20 years, in which food processing, storage systems, and transportation are significant contributors to the agri-food supply chain. There are several recommendations to reduce the carbon footprint when research is essential, such as adopting more efficient product processing and storage system technologies and improved waste management.

Keywords: Agroindustry; Agro-food Industry; Carbon footprint; Indonesia; Supply chain

Study on commercialization of seed new superior rice varieties in Central Kalimantan

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ABSTRACT

Rice is the most important food in Indonesia, and demand for rice has gradually increased. There have been several efforts to increase national rice production, including the use of new superior varieties of seeds. Cultivating new superior varieties is the most efficient way of increasing rice production in Indonesia. These new superior varieties have several superior characteristics, such as early maturation, high productivity, resistance to pests and diseases, and rice quality. From 2011 to 2022, more than 32 new superior rice varieties were introduced by UPBS BPTP Central Kalimantan and accepted by farmers and seed producers to produce seeds and cultivate them. Inpari 30 Ciherang Sub-1 and Inpari 42 Agritan GSR are the most popular rice varieties for farmers.

**Time Series Forecasting for Environmentally Friendly Production in Improving
Tea Quality**

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ABSTRACT

Tea is the world's most widely consumed and traded commodity by the global community and is even one of the livelihoods for farmers around the world. However, the tea industry needs to innovate in the face of increasingly pressing environmental challenges. This research provides a basis for improving the quality of tea products along with minimizing negative impacts on the environment, in line with the push for environmental awareness. Forecasting allows companies to plan for future demand, avoid overproduction, and reduce production waste. From the calculations performed, the forecasting results show that Grade I production should be reduced by 1.6%, Grade II reduced by 2%, and Grade III increased by 5.1% from the previous production

Improving Tea Powder Production Productivity through the Implementation of Environmental Friendly Principles

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ABSTRACT

The powdered tea production industry is a crucial sector within the global food and beverage industry. However, the rapid growth in consumer demand has given rise to significant environmental challenges, including deforestation, excessive use of natural resources, and hazardous waste. This research addresses how the application of environmentally friendly principles in the powdered tea production process can effectively enhance productivity while reducing negative environmental impacts. We explore sustainable technology strategies, waste management, and agricultural practices in the context of powdered tea production. The findings of this research can provide valuable guidance for companies and producers to adopt a more sustainable approach to powdered tea production.

Lighting Layout Design at Cigarette Paper Packaging Station for Energy Efficiency

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ABSTRACT

Lighting plays a crucial role in achieving the targeted performance in the cigarette paper inspection department. The inspection process, which involves assessing paper quality for evenness, cleanliness, and symmetry, falls short of the goal of 77 reams per worker per shift. Illuminance levels currently average 55 lux, significantly below the recommended standard of 200 lux. This insufficient illumination leads to a failure to meet the required 178,200 lumens, resulting in the unmet cigarette paper production target. To address this issue, two alternatives are proposed. The first involves replacing the existing lamps with a different type and reorganizing the lamp layout. This layout adheres to the principle of uniformity and spacing criteria, resulting in the placement of seven lamps with a 4.08-meter gap between each. This arrangement ensures that lighting is concentrated directly above the packaging table and evenly distributed throughout the room. The second alternative is to augment the existing lighting by adding lamps to the packaging tables, each with a luminous flux of 200 lumens. These lamps can be conveniently attached to the table leaves and adjusted to suit the workers' specific needs. These proposed changes aim to improve lighting conditions and subsequently enhance productivity in the cigarette paper inspection department.

Keyword: Contour, Cigarette Paper, Lighting, Efficiency

Analysis of the Institutional Risk of the Halal Supply Chain in the Micro-Scale Potato Chips Industry Cluster Using the SCOR Method

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ABSTRACT

Batu City as an agropolitan city has the potential to increase the number of MSMEs every year with its superior product in the form of potato chips. The increase in the number of MSMEs has resulted in the level of competition between the potato chip industry becoming higher, thus requiring business actors to increase product competitiveness. One of them is by managing halal supply chain institutions and halal certification. Problems faced in halal supply chain institutions can occur in the procurement of raw materials, production processes, storage, distribution and halal management. The aim of this research is to map the institutional risks of the halal supply chain in the micro-scale potato chips industry cluster using the Supply Chain Operation Reference (SCOR) method. Actors in the halal supply chain institution consist of suppliers, producers and retailers. In this research, there are a number of risk activities that can affect the halal integrity of potato chip products. The results of risk mapping in halal supply chain institutions using the Supply Chain Operation Reference (SCOR) method showed that in the planning process 30 risk events and 32 risk agents were identified, for the source process there were 10 risk events and 9 risk agents. In the make process there are 24 risk events and 24 risk agents, for the deliver process there are 4 risk events and 4 risk agents, while in the return process there is 1 risk event and 1 risk agent

Keywords: Potato Chips, Risks, Halal Supply Chain, Supply Chain Operation Reference

**MEASURES OF THE SUCCESS OF NEW PRODUCT DEVELOPMENT
PROCESS AT PT.XYZ**

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ABSTRACT

Successful product development is an important objective of companies, thus a measurement of success in new product development is needed. This research aims to know factors that determine the success of new product development (NPD) and analyze the performance of NPD processes at PT.XYZ. To achieve this objective, metrics of NPD success is developed based on literature study and in-depth interview with the company. The metrics to measure the success of NPD process success using 3 dimensions, namely, process, organizational, and product performance. Process performance dimension includes indicators related to idea generation and process development time. Organizational performance dimension includes indicators of crossfunctional departments and involvement of external parties. Product performance dimension includes indicators related to customer and market share. Newly developed metrics were tested on the NPD process of two new products from PT.XYZ. From the results, it is concluded that the metrics are validated and accepted by the company and can be used to measure the NPD process success.

Keywords: New Product Development (NPD), Performance Measure, NPD Success

Softness Indicator Made from Tapioca and Ammonium Molybdate for Avocado

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ABSTRACTS

A softness indicator made from tapioca and ammonium molybdate was used to detect the ripeness of fruit. The indicator in the form of a tablet was attached inside the package of avocado and it was analyzed for its changing color. The results show that there was a suitability between indicator color changes and avocado quality degradation. The tablet indicator showed different colors before and after avocado has been ripped. The color of the indicator from the 1st day until the 2nd day of storage was bright yellow with the °Hue value ranging from 99 – 100. The tablet color then turned into dark blue on the 5th day of storage with °Hue value of 114 – 178 when the avocado was rotten. The color change was not evenly distributed over the entire surface of the tablet due to being less moisture absorbed by the tablet indicator. In the meantime, fruit quality degradation during the storage was indicated by the increased percentage of weight loss of 20.1% after six days of storage. The firmness decreased and it was confirmed by a texture value of 12.55+1.48 mm/3s on the 1st day of storage became 15.9 + 0.07 mm/3s on the last day of storage. The total soluble solid was recorded to increase from 11°Brix to 14°Brix.

Key words: avocado, color change, softness indicator, ripeness indicator

Community development of a business ecosystem in planting media commodities (Gotthai) with One Village One CEO Program: a case study of Cianjur

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ABSTRACT

In the midst of difficult economic conditions, with 11.74 million poor people in urban regions and 14.16 million in rural areas as of March 2023, innovation in natural resource management is critical. This study investigates how the agricultural community in Sukanagalih, Cianjur, uses husk charcoal to create sustainable and economically beneficial planting media. This study discovered that economic necessities have driven farmers in Sukanagalih to develop and use husk charcoal as a planting medium, not only for the domestic market but also for the international market, using a survey approach with purposive selection. Community income increased significantly, from IDR 1,450,000 in 2019 to IDR 3,325,000 in 2021, supported by assistance in husk charcoal production, packaging branding, and marketing network expansion through the "One Village One CEO" program. These findings demonstrate that community empowerment through innovation and business assistance is the key to developing a sustainable and profitable business ecosystem.

The role of the community in preserving coffee and the environment with One Village One CEO Program: *a case study of Cikajang coffee farmers*

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ABSTRACT

Sustainable forest management in upstream rivers contributes to ecological balance, disaster mitigation, and economic opportunity for nearby populations. Amid this dynamic, the Cikajang coffee community plays an essential role in sustainable management through community forests. The objective of this study is to evaluate the composition of forest vegetation as well as the function of the Cikajang coffee community in sustainable agricultural enterprise. Surveys have revealed that tea, coffee, and horticulture plants dominate forest vegetation. The Cikajang Coffee Community was founded in response to a demand for coffee cultivation education, marketing tactics, and financing. This community grows coffee in forest locations, using forest village community organizations (LMDH) as a shelter. Community assemblies to interact and share experiences become valuable social capital in the preservation of the environment. Coffee commodities have become an economic pillar for society as a result of academic support in cultivation and marketing, particularly under the "One Village One CEO" programme. These findings demonstrate the importance of community empowerment in balancing economic needs and environmental sustainability.

*Existing Condition Analysis and Business Models Identification of
Rice Farmer Corporation*

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ABSTRACT

The institutional transformation of rice farmers from a combination of farmer groups to a corporate business entity requires farmers to be able to achieve rice productivity targets and run the right business model for business sustainability. The objective of this research was to analyse the existing conditions of rice farmer corporations including rice production performance, farmer added value and rice corporation business models. In the initial stage, an assessment of the performance of rice farmer corporations was carried out using a comparison method against rice productivity targets as a benchmark. After that, an analysis of farmers' added value was carried out using the Hayami method. Continue by explaining the description of the existing business model carried out by the rice farmer corporation to identify ongoing business processes, using the canvas business model method to identify elements that influence the sustainability of the rice business. The research was conducted in five rice agro-industry centre locations, namely Karawang Regency, Subang Regency, Indramayu Regency, Demak Regency, and Karanganyar Regency. The research results in the form of performance analysis and the canvas business model are expected to provide managerial implications for rice farmer corporations as material for improving the implementation of subsequent corporate activities or for the replication process for farmer corporations in other areas.

Life Cycle Sustainability Assessment of Batik Production using Natural Dyes

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ABSTRACT

The research aimed to conduct a comprehensive assessment of the life cycle sustainability of batik production using natural dyes. The study focused on evaluating the environmental, economic, and social impacts associated with the use of natural dyes in the batik dyeing process. The research methodology followed a life cycle assessment (LCA) framework based on SNI ISO 14040:2016 and SNI ISO 14044:2017. Environmental impacts such as energy consumption, raw material utilization, and waste generation were quantitatively analyzed. Economic evaluation included production costs, efficiency, and economic value of the batik production process using natural dyes. Social impacts, including working conditions and the welfare of batik artisans involved in the production, were also assessed. The results of this research provided insights into the sustainable performance of batik production using natural dyes. The findings helped identify opportunities for improving environmental sustainability, economic viability, and social well-being within the batik industry. Furthermore, the research served as a valuable resource for stakeholders in making informed decisions regarding the use of natural dyes in batik fabric production. This study contributed to promoting environmentally friendly practices in the batik industry while preserving biodiversity and local cultural heritage.

Keywords: *batik production, life cycle sustainability assessment, natural dyes*

Fractionation of Nutmeg Oil (*Myristica fragrans*) Using Spinning Band Distillation

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ABSTRACT

This study aims to evaluate the performance of fractionation columns using spinning band distillation for the separation of nutmeg oil components (*Myristica fragrans*) and purification of 4-ol terpinene and myristicin compounds. Fractionation uses a pressure of 15 mmHg and a reflux ratio of 5:1 and is divided into 8 fractions. GCMS results obtained showed that spinning band distillation was able to increase the purity of 4-ol terpinene and myristicin up to 59% and 90% with a total yield of 97.5%.

**The Effect Of Pressure And Reflux Ratio On The Spinning Band Distillation Process
On The Purity Of Myristicin Isolate From The Terpenless Fraction Of Nutmeg Oil**

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ABSTRACT

Nutmeg oil contains myristicin, which functions as an antioxidant and antiaging in cosmetic products by inhibiting the activity of the collagenase enzyme. Isolation of myristicin compounds from the terpenless fraction is a strategy to increase the purity of myristicin isolates effectively and efficiently. The research aims to find the condition parameters of the myristicin separation process based on pressure and reflux ratio. Fractionation was carried out using the spinning band distillation method at pressures of 10 and 15 mmHg, with reflux ratios of 3:1 and 5:1. The fraction cutting temperature is regulated based on the boiling point of the compound starting from an open cut temperature of 172 oC to a close cut temperature of 300 oC. Parameters analyzed: The physicochemical properties of the material are specific gravity, refractive index, solubility in 96% ethanol, myristicin content and yield. Research shows that the pressure and reflux ratio are not significant to the purity of myristicin, caused by the range of pressure and reflux ratio values being too close, but can increase the purity of myristicin compounds from initial levels of 51.25% to 83.23%. Thus, spinning band fractional distillation purified the myristicin compound in the terpenless fraction of nutmeg oil.

Procurement Planning for the Green Beans Provision of Small-Scale Agroindustry in Kalibaru Banyuwangi.

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ABSTRACT

Planning for the procurement of green beans in agro-industry greatly influences the industry's ability to meet production needs and more efficient operational management. Shortages of raw materials can result in a decrease in production quantities, thereby impacting consumer demand, while excess supply can cause inventory buildup and increased storage costs. In reality, not all agro-industries can carry out suitable raw material procurement planning, such as the application of inaccurate forecasting methods with limited data. This research aims to identify sales patterns or trends, then determine more accurate forecasting, and determine a more optimal model, as well as measure the level of error in forecasting using the time series method and ARIMA model. The results show that the sales trend is at an equilibrium value with a lower limit of 29.2 kg and an upper limit of 43.8 kg. The ARIMA model can provide accurate predictions of the demand for green beans with a 1,0,1 model with a total MAPE value of 2.2%. The results of this prediction can help the Banyuwangi coffee agroindustry to make more efficient decisions regarding the quantity of green beans, namely ± 36.5 kg.

Keywords: ARIMA, Forecasting, Green Beans, MAPE, Planning Procurement.

**Production Layout Design of Ginger Leather Candies
at Sari Sehat, Bogor**

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Sari Sehat is one of the small medium enterprises that produces various kinds of herbal products such as simplicia, herbal powder, instant herbal drink, rosella syrup and jelly. The increasing demand for ginger products has driven Sari Sehat to continue the development of ginger based products that is ginger leather candies. Optimal formulation of ginger leather candy has been developed and produced as a new product in cooperation with Department of Agro industrial Technology, IPB University. Production of new product made Sari Sehat to evaluate the facilities including space and layout. Production layout design of ginger leather candies is carried out using Systematic Layout Planning (SLP) method. CORELAP (Computerized Layout Planning) algorithm is also used for allocating the layout. Simulation for the layout design shows that the spaces needed are 16.09m² with the total material displacement distance is 41.46 meters.

Keywords: CORELAP, ginger leather candy, layout design, Systematic Layout Planning

Ginger Leather Candy Formulation at CV Sari Sehat Bogor

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ABSTRACT

CV Sari Sehat is an SME's that produces herbal products such as instant powdered drinks, simplicia, and powdered tea. Product development to be carried out is by making red ginger jelly candy in the form of thin layers, namely Ginger Leather Candy (GLC). The materials used to manufacture GLC are water, red ginger extract, pectin, granulated sugar, brown sugar, corn sugar syrup, citric acid, and icing sugar as product coatings. The chemical test results showed that the GLC product had a moisture content of 15.2%; ash content of 1.5%; sucrose of 46.42%; reducing sugar of 10.94%. The GLC product's antioxidant and antimicrobial activity of this GLC product is included in the weak category with an antioxidant activity is included in the weak category with an antioxidant activity value of 177.059 µg/ml and an inhibition zone of 2 mm. The results of the organoleptic test showed that the overall average level of consumer preference for GLC products was 3.95/5 which indicated that consumers liked this GLC product.

Keywords: ginger leather candy, red ginger

***CONCEPTUAL AGROINDUSTRY FOR REFINING NUTMEG ESSENTIAL OIL
BASED ON CIRCULAR ECONOMY***

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ABSTRACT

Indonesia, as the largest nutmeg producer in the world, must continue to improve its performance, both upstream and downstream, in order to continue to increase its competitiveness. The nutmeg essential oil refining agro-industry in Indonesia, one of the downstream industries, generally still uses a production process which can be said to have not experienced any real changes from the past, including using a distillation process for a long time, the resulting yield is not optimal, and is still unable to utilize liquid waste in the form of hydrosols left over from the separation of essential oils produced. Efforts that are thought to be able to overcome this problem are by implementing a circular economy approach that can accommodate economic and social activities as well as overcome problems in the nutmeg essential oil refining agro-industry, including through a circular material input model (circular inputs) and product lifeextension (product use). life extension). This paper will examine the conceptual agro-industry of nutmeg essential oil refining in a comprehensive manner based on a review of the latest related scientific papers, such as papers downloaded from Science direct, Emerald insight, Google scholar, Garuda portal, Cross- reef as well as DOAJ at least 5 last year.

Keywords: agro-industry; competitiveness; circular_economy; nutmeg_refinery

Investigation of the Supply Chain Design Process of Sustainable Shisha Briquette Production System

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ABSTRACT

The coconut charcoal briquette product has a great potential for export markets abroad. One variant of the coconut shell briquette product is the shisha briquette. The purpose of this research is to investigate the design of a sustainable supply chain that includes identifying sustainability indicators, collecting information data from related stakeholders, implementing, monitoring and evaluating, identifying key stakeholders, and understanding the role of each stakeholder in the sustainable production process of shisha briquettes. The investigation of the supply chain is done through five steps, namely identifying sustainability indicators, collecting data related to sustainability, conducting sustainability analysis, making improvements to the gaps, and monitoring and evaluating. The flow of processes and data in all production system activities is represented by Data Flow Diagram (DFD). DFD represents the workflow in a process with a focus on data flow and transformation. An overview and interaction between entities in the company are described using Business Process Model Notation (BPMN). The result of the research is a supply chain model that describes the problem data in the supply chain distribution system and collaboration between stakeholders to make improvements and specifications of processes and roles of stakeholders in a sustainable shisha briquette production system.

Key Word: Supply Chain, Sustainable Production System, Shisha Briquettes, DFD, BPMN.

THE EFFECT OF TEMPERATURE AND PACKAGING OF BLACK GARLIC ON ITS CHARACTERISTICS DURING STORAGE

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ABSTRACT

The transformation of garlic into black garlic is a simple process that yields products beneficial to human health. The curing process, conducted at a temperature of 65-70°C for 15 days in a rice cooker, alters the garlic's physicochemical properties. These changes are most evident in the garlic's color, moisture content, volatile compound levels, and sugar content. Black garlic has a chewy texture and a moisture content ranging from 40-50% (w/w), yet its physicochemical properties remain stable during storage for a specified duration. The aim of this research was to study changes in physicochemical properties during storage using various packaging types and to determine optimal storage conditions. The study employed literature review methods and conducted storage experiments for seven weeks at room temperature, in an incubator, and in a refrigerator. Two different types of packaging were used: an aluminum pouch and a plastic jar. The experiments were then performed to measure moisture content, hardness, total acidity, and reducing sugar levels, and were conducted using a randomized block design. The experimental results reveal that both temperature and packaging significantly influence moisture content. Over the course of seven weeks, the average increase in water content ranged from 13% to 22% for all treatments. The smallest changes in moisture content occurred when the garlic was stored in polyethylene terephthalate (PET) at a temperature of 10°C. These moisture content changes correspond with the results of hardness tests, which show a softening of the garlic over the seven-week period. During storage, the content of reducing sugars decreased, but total acidity increased. This suggests that a biological process converting sugars into acids was underway, although the changes were insignificant when using PET packaging at a temperature of 10°C. In conclusion, this study found that moisture content, hardness, levels of reducing sugars, and total acidity all changed during seven weeks of storage. The best storage conditions were determined to be at 10°C using PET packaging.

Keywords: black garlic, packaging, storage, physicochemical properties

IoT Model for Production House Control from the Development of Wetland Commodity Start-up

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ABSTRACT

Startup must have a realistic vision and a profitable business plan. *Startup* should be able to find customers being *willing to pay* during the *customer validation* process. Products which customers are interested in must gain popularity consistently with *repeatable* and *scalable startup* business models. The aim of the research was to design an IoT model for production house control from the development of Wetland Commodity *Start-up*. The Business Model was designed based on the Business Process Model Notation oriented towards creating according to the wishes and needs of *User*. The *design thinking* developed referred to 5 (five) stages of the process, namely *Empathize*, *Define*, *Ideate*, *Prototype* and *Test*. It was hoped the *User* would reach the stage of trying out the trial product having been made. One of the outputs was in the form of an IoT model implemented in an environmentally friendly wetland commodity production house. The advantages of this model were in terms of efficiency of electricity resources and smart *monitoring* based on *mobile* (android & iOS). The power source was carried out in a *hybrid* manner, that was electricity from PLN and from solar panels, so that it could detect quickly when a power outage occurred and then automatically switched according to the availability of electric power. Another advantage was doing smart *monitoring*. With this feature, the model was able to monitor and control nutrients so it was in sufficient ppm concentration according to the growth phase of the commodity and could provide an audio signal if there was an attack by pests on organic plantings carried out in production house. The priority of using domestic components is also an important part of the research output.

Keywords: *customer validation, design thinking, wetlands, IoT model, startup*

Design of Smart Food Packaging Monitoring Model Based on ChiplessRFID Sensor

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ABSTRACT

Logistics affects the efficiency and effectiveness of business processes. Manual monitoring involves many labor-intensive processes that can cause inefficiencies and ineffectiveness in the logistics sector. Sensors integrated into product packaging can benefit consumers by ensuring freshness and quality while allowing retail industries to manage stock and product authenticity more efficiently. Chipless RFID sensors are wireless technology that can provide advantages as input data media in the series of product distribution system activities. The integration of sensor technology and RFID presents new opportunities in controlling and monitoring perishable products. This research presents a smart radio frequency label with a sensor that can measure temperature and humidity. The purpose of this research is to analyze the process of monitoring agro-industrial products from the company to the consumer and design the monitoring system components. The method used in designing the vehicle monitoring system is the Software Development Life Cycle, which consists of planning, analysis, design, and implementation. The system design stage is carried out by designing Business Process Model and Notation, followed by making use case diagrams and Conceptual Data Models to determine the actors involved. The result of this research is the design of a monitoring system modeling using chipless RFID sensors.

Keywords: Chipless RFID, monitoring, smart packaging, system design

Development of Closed Production Process Model of Virgin Coconut Oil (VCO)

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ABSTRACT

The production process of the Virgin Coconut Oil (VCO) industry uses a lot of energy in processing coconuts. In addition to the main product, this industry also generate by-products in the form of husk and shell that have the potential to be used as an energy source. This study aims to develop an energy-independent VCO closed system production model. The development was carried out through mass balance analysis, calculation of potential energy of by-products, and closed system modelling of the VCO production process. This study used secondary data with coconut as the main input. By using a basis of 50 tons per day, the result of this study obtained optimum yield to be 7.9% and has a by-product energy potential of 5,646 kWh per day. This energy can meet the energy needs of the production process of 1,703 kWh per day. This study explains that the VCO industry can be energy independent by optimally utilizing the by-products.

Keywords: by-products, closed system, energy independent, production process,

Designing a Business Model for Start-up Development of Downstream Wetland Products Based on Design Thinking

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ABSTRACT

Wetland in South Kalimantan, especially swamp land, covers 6.07% of land area. Wetland commodity base downstream products need to be accommodated in a start-up by providing a reliable business design model focusing not only on attractive and user friendly UI, but also on UX involving the user's "feelings" when operating an application on the platform. The research aimed at designing a business model accompanied by monetization to become a reliable start-up specifically for wetland commodities applying the concept of designthinking. The methodology began by conducting a needs analysis, determining an issue strategy, creating a demand design using the Analytical Network Process, establishing a Hierarchical Task Analysis for idea development and product design, brainstorming, followed by analysis and creating a Business Model. The results of the analysis of needs and users in creating the W2 ULM application consisted of Admins, Innovators, Partners as Wholesale Consumers, Material Providers and for Monetization purposes. The results of the Entity Relationship Diagram analysis showed there were wishes from users, and tables of user, rating, product, banner, category, transaction, innovator and visitor. Then, the interface design of the application was carried out, accompanied by monetization applying the thinking design concept. The value obtained from research results in applications bridging individual consumers and wholesalers with product manufacturers to assist in interaction and transaction process. However, it also bridges product makers with providers of materials resulting from quality downstream wetland commodities interacting and transacting to fulfill and increase their production needs.

Keyword : *Analytical Network Process , Design Thinking, Start-up, UI, UX.*

**PRODUCT DEVELOPMENT OF FUNCTIONAL DRINK FROM THE EXTRACT
OF FRESH CHERRY COFFEE PULP**

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ABSTRACT

To obtain the green coffee bean, more than half of the coffee cherry are discharged as agriculture solid by-products. The coffee cherry consists of an outer skin that covers a soft and sweet pulp. Arabica coffee is commonly used wet processing; and this process will remove the skin and pulp of fresh coffee cherry. Fresh cherry pulp mainly consists of crude fiber (39.9%), carbohydrate (25.6%), and some active compounds, which have great effects to human health. By using amylase and pectinase enzymes-assisted extraction process, it produced the extract with higher antioxidant activity, total soluble sugar and low turbidity compared to the maceration in water solvent. The extract has bitter taste, and for formulating the functional drink, we added some ingredients. The sole cinnamon or with cinnamon and lemon were enriched the extract to improve the consumer acceptability. Both formula can be accepted by the consumer with average score 3.41-3.52 of Likert scale 5.

Keywords: fresh cherry pulp extract, functional drink, cinnamon, lemon

Predicting the visibility of solar cell arrangement for agro-industrial watering system

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ABSTRACT

Agro-industrial development requires innovation from many research fields including renewable energy. Many researchers have explored the use of solar cell systems in irrigation. However, careful consideration should be applied as solar cell installation may not be visible for the projected agro-industrial system. At this point, intensity of the sun radiation, coverage and energy storage should be considered to predict the visibility. This study analyzes the visibility predictions using statistical models which lead to quantitative and budget considerations for certain coverage area and debit requirements.

**Determining the Method of Forecasting Sales of Cheese
Products at PT XYZ**

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ABSTRAK

Processed livestock products are important to the community as the second source of animal protein after fishery products. Goat meat is commonly prepared as satay, soup, stew, tongseng, and others. However, ready-to-eat goat meat products in packaging are still rare because they are mostly produced upon order. MSME commercial sterilized products like HnR Food developed Ready to Eat (RTE) products according to consumer demand. Proper sterilization and packaging are crucial for RTE product quality and shelf life. RTE products have a longer shelf life with appropriate packaging. Shelf life testing was conducted using the ASLT Arrhenius model. The retort pouch bag packaging was suitable for the specified sterilization process and offered a more affordable alternative to cans. The shelf life of tongseng goat product in the retort pouch bag was determined to be 93 days or approximately 3 months at 25°C and could extend up to 170 days or approximately 6 months when stored at 4°C.

Keywords: Arrhenius, commercial sterilized products, goat tongseng, retort packaging, shelf life

Design of Retort Pouch Packaging and Shelf Life Estimation for Commercial Sterilized Goat Tongsenng Product by MSMEs.

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ABSTRAK

Processed livestock products are important to the community as the second source of animal protein after fishery products. Goat meat is commonly prepared as satay, soup, stew, tongseng, and others. However, ready-to-eat goat meat products in packaging are still rare because they are mostly produced upon order. MSME commercial sterilized products like HnR Food developed Ready to Eat (RTE) products according to consumer demand. Proper sterilization and packaging are crucial for RTE product quality and shelf life. RTE products have a longer shelf life with appropriate packaging. Shelf life testing was conducted using the ASLT Arrhenius model. The retort pouch bag packaging was suitable for the specified sterilization process and offered a more affordable alternative to cans. The shelf life of tongseng goat product in the retort pouch bag was determined to be 93 days or approximately 3 months at 25°C and could extend up to 170 days or approximately 6 months when stored at 4°C.

Keywords: Arrhenius, commercial sterilized products, goat tongseng, retort packaging, shelf life