



SCIENTIFIC PROGRAM BOOK

The 3rd International Undergraduate Conference
on Agriculture & Life Sciences



December 18th, 2023

Faculty of Agriculture, University of Bengkulu
Bengkulu, Indonesia

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GENERAL RUNDOWN

**The 3rd International Undergraduate Conference on Agriculture and Life Sciences
(Online Conference). December 18th, 2023.**

Monday, December 18 th , 2023			
Time		Duration (Minutes)	Activity
Start	Over		
08.00	08.15	15	Join Zoom
08.15	08.35	20	Opening by MC (Syafa Aisyah Putri and Fikri Luthfi Fahmi) - National anthem “Indonesia Raya” - Traditional Dance - Reading holy Al-Qur’an
08.35	08.40	5	Welcome Speech from Chairman of IUCA 3 rd 2023 Dr. Nurmeiliasari, S.Pt., M.Sc.Ag
08.40	08.45	5	Welcome Speech from Dean of Faculty of Agriculture, University of Bengkulu Prof. Dr. Ir. Dwi Wahyuni Ganefianti, M.S
08.45	08.50	5	Welcome Speech from Princess of Naradhiwas University Prof. Dr. Jakhaphan Pitchayapipatkul
08.50	08.55	5	Welcome Speech from Yala Rajabat University Prof. Wilaiman Kaewtathip, Ph.D
08.55	09.00	5	Welcome Speech from Univesiti Malaysia Kelantan Prof. Dr. Seri Intan Binti Mokhtar
09.00	09.05	5	Welcome Speech from Garmian University Dr. Mohammad Ibrahim Khalil
09.05	09.10	5	Do’a
09.10	09.15	5	Opening by Moderator Prof. Heri Dwi Putranto, S.Pt., M.Sc., Ph.D.
09.15	0.45	30	Keynote 1: Dr.Saithong Kaewchai Princess of Naradhiwas University, Thailand
09.45	10.15	30	Keynote 2: Dr. Kharul Azmi Mu’azzam Binti Abdul RahmanFakulti Industri Asas Tani, Universiti Malaysia Kelantan
10.15	10.45	30	Keynote 3: Prof. Agustin Zarkani, S.P., M.Si., Ph.D University of Bengkulu, Indonesia
10.45	11.15	30	Question & Answer Session
11.15	11.25	10	Closing by MC (Syafa Aisyah Putri and Fikri Luthfi Fahmi)
Parallel Session			
13.00	13.30	30	Join to Parallel Session (via zoom)
13.30	16.30	180	Parallel Session (10 minute/video and 5 minute/presenter):

			Room 1 : Elsa Lolita Putri, SP., MP. Room 2 : Hefri Oktoyoki, S.Hut., M.Si. Room 3 : Arina Fatharani, S.T.P, M.Sc. Room 4 : Ika Gusriani, S.TP., MP. Room 5 : Nur Lina Maratana Nabiu, S.Pi., M.Si Room 6 : Ana Ariasari, S.Pi., M.Sc. Room 7 : Kartika Utami, S.P., M.Sc Room 8 : Woki Bilyaro, S.Pt., M.Si. Room 9 : Hariz Eko Wibowo, S. Stat., M.M Room 10 : An Nisa Nurul Suci, S.Si., M.Si.
16.30	16.45	15	Return to main room for closing ceremony

WELCOMING REMARKS

The Dean of Faculty of Agriculture



Welcoming Remarks Dean of Faculty of Agriculture University of Bengkulu Prof. Dr. Ir. Dwi Wahyuni Ganefianti, M.S. Greetings from Bengkulu!.

I would like to welcome everyone to the 3rd IUCA - International Undergraduate Conference on Agriculture and Life Sciences 2023. The faculty of Agriculture is honoured to have a chance to organize the 3rd IUCA 2023 together with the other co-organizer universities. On behalf of the Faculty of Agriculture, University of Bengkulu, I would like to express our high appreciation to all of the co-organizing universities because this great event would not be successful without your support. This international undergraduate conference is an excellent opportunity for undergraduate students to have international seminar experience, and to build international networking and stepping stone for more international achievements.

I believe that this seminar will create a fruitful discussion, brilliant ideas, and beautiful friendships and will give benefit all students. I wish you all have a great seminar!

Wassalamualaikum warahmatullahi wabarakatuh.

Bengkulu, December 2023

CHAIRMAN SPEECH

Dr. Nurmeiliasari, S.Pt., M.Sc.



Dear participants, IUCA is an excellent opportunity for undergraduate students to share research topics, advances technology used and global issues in agriculture. This event aims to scale up the presentation skill. It is the moment to build international networking. This conference is a collaboration of 8 co-organizing universities. This conference is an annual event, and this year Faculty of Agriculture, University of Bengkulu is honoured to hold the 3rd IUCA. This year's IUCA focuses on some fields of interest: Animal Science, Aquaculture and Fisheries, Agribusiness, Agricultural Extension, Precision Agriculture, Agriculture and Environment, Agroforestry and Landscaping, Agriculture Engineering, Plant Sciences, Food Science and Technology, Plant Science and Plant Protection, Socioeconomics of Agriculture, Agriculture and Forestry, Life Science, Veterinary Science.

This scientific program book provides information about the activities and materials presented at the conference. Finally, we express our highest appreciation and gratitude to co-organizing universities. Our thank goes to Princess of Naradhiwas University, Prince of Songkla University, Universiti Malaysia Kelantan, Yala Rajabhat University, University of Garmian, South Eastern University, Omar Al-Mukhtar University, and all committee members, in particular University of Bengkulu as the host of the event who have contributed their thoughts, time, and contribution to this conference. We also hope that the 3rd IUCA can give benefit and contributions to the development of agriculture and life sciences research.

Bengkulu, December 2023

THE COMMITTEE

The 3rd International Undergraduate Conference on Agriculture & Life Sciences

List of Committee

Organizer: Faculty of Agriculture, University of Bengkulu, Indonesia

Co-Organizer

Princess of Naradhiwas University, Thailand
Universiti Malaysia Kelantan, Malaysia
South Eastern University of Sri Lanka, Sri Lanka
Yala Rajabhat University, Thailand
Prince of Songkla University, Pattani Campus, Thailand
University of Garmian, Iraq
Omar Al-Mukhtar University, Libya

Keynote Speaker

1. Dr. Saithong Kaewchai, Princess of Naradhivas University, Thailand
2. Dr. Kharul Azmi Mu'azzam Binti Abdul Rahman, Fakultas Industri Asas Tani, Universiti Malaysia Kelantan
3. Prof. Agustin Zarkani, S.P., M.Si., Ph.D, University of Bengkulu, Indonesia

Steering Committee	: Prof. Dr. Ir. Dwi Wahyuni Ganefianti, M.S. Yansen, S. Hut., M.Sc., Ph.D. Dr. Indra Cahyadinata, S.P., M.Si. Prof. Agustin Zarkani, S.P., M.Si., Ph.D.
Chairman of IUCA	: Dr. Nurmeiliasari, S.Pt., M. Sc
Secretary	: Nola Windirah, S.P., M.Si
Treasurer	: Nella Tri Agustini, S.Kel., M.Si.
Event Division	: Wuri Prameswari, SP., M.Si. Selly Ratna Sari, S.Pi., M.Si Hariz Eko Wibowo, S.Stat., M.M Syafa Aisyah Putri
Registration Division	: Akbar Abdurrahman M, S.Si.,M.Sc. Fikri Lutfi Fahmi Fika Yuni Irmanita, S.P
Public Relation Division	: Hefri Oktoyoki, S.Hut., M.Si. Maria Paulina, S.P., M.Si Mela Faradika, S.Si., M.Si Sistanto, S.Pt., M.Si Sucipto, A.Md
Equipment & Logistics Division	: Herlina Utami, SE., M.M Fitri Nomiasari, S.E Amsuludin Koldi Sudiansyah, S.P
Documentation Division	: Febrizany Sanjung MF, S.P Arif Rusman, S.Pt. Teddy Syah Fan Royen Ana Meinawati Rahmat Hidayat
Consumption Division	: Erni Gustina, S.Kom Nadia Panji Pamela, A.Md Elsa Vandana, S.Si

ROOM 1: Plant Science

Moderator: Elsa Lolita Putri, SP., MP.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	PLS 001	Ronaldo Aprilian, Nanik Setyowati, Uswatun Nurjanah	Weed Seed Bank at Various Soil Depths in Mature Phase Oil Palm Plantation on The Coastal Land of Bengkulu	13.30-13.40
2	PLS 002	Diki Wahyudi	Identification of Weeds and Their Potential as Organic Fertilizer in Pondok Kelapa District, Central Bengkulu, Indonesia	13.40-13.50
3	PLS 003	Nimas Mardhotillah	Identification of Weeds and Their Potential as Organic Fertilizer in Muara Bangkahulu District, Bengkulu City, Indonesia	13.50-14.00
Q & A Session				14.00-14.10
4	PLS 004	Devia Desmantri, Uswatun Nurjanah, Nanik Setyowati	Weeds diversity at various soil depths in four sub-districts of Bengkulu, Indonesia	14.10-14.20
5	PLS 005	Alhafizh Alhafizh, Uswatun Nurjanah, Nanik Setyowati	Weed Seed Banks at Various Soil Depths on Coconut and Rubber Lands of Bengkulu Coast, Indonesia	14.20-14.30
6	PLS 006	Vikry Apriza Haris	Identification and Domination of Weeds in Air Napal District, North Bengkulu Regency	14.30-14.40
Q & A Session				14.40-14.50
7	PLS 007	Dwi Anggraini	Reduction of N-P-K Fertilizer Using Bio- organic Fertilizer and Silicate Minerals in Green Mustard Cultivated in Coastal Saline Soil	14.50-15.00
8	PLS 008	Hari Susanto	Effects of Drought Stress on Soybean Root Morphological	15.00-15.10
9	PLS 009	Siti Solihah Azmi	Ethephon Foliar Application at Off- Season: Impact on Vegetative and Flowering of Harumanis Mango (Mangifera Indica L.)	15.10-15.20
Q & A Session				15.20-15.30

ROOM 2: Agriculture and Forestry

Moderator: Hefri Oktoyoki, S.Hut., M.Si.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	PLS 010	Najeehah Sama, Saithong Kaewchai	The Application of Spent Mushroom Lumps for the Growth and Yield of <i>Agrocybe cylindracea</i>	13.30-13.40
2	PLS 011	Raheema Wamaedeesa, Neesah Pador, Wanita Sa-e	Effects of different LEDs light spectrum on the growth of <i>Philodendron</i> "Cherry Red" plantlets under Aseptic Condition	13.40-13.50
3	PLS 12	Nuur Shafiqah Zaini	The Influence of Paclobutrazol (PBZ) On the Flowering and Physiological Characteristics of 3 Years Old <i>Mangifera indica</i> CV. Harumanis During Off-season	13.50-14.00
4	PLS 13	Raheema Wamaedeesa, Nuseeta Awae, Nurihan Chewaesulong, Pimpakan Phuyot1	Colchicine effects on Morphological Characters of <i>Xanadu</i> (<i>Philodendron xanadu</i>) under Aseptic Condition	14.00-14.10
Q & A Session				14.10-14.20
5	AGV 001	Fikri Nur Hidayat, Nanda Nanda, Sukisno Sukisno	Identification Of Tsunami Inundation Distribution For Mapping Of Evacuation Paths Along The Coast Bengkulu City	14.20-14.30
6	AGV 002	JESSY CHIN MING WO	Oviposition Behavior Preferences of Yellow Stem Borer (<i>Scirphaga incertulas</i>) on Vetiver Gras (<i>Vetiveria zizanoides</i>) and Local Rice Varieties	14.30-14.40
7	AQU 001	Suet Leng Chong, Chui Wei Bong	Carbapenem-Resistant Bacteria in Aquatic Environments	14.40-14.50
Q & A Session				14.50-15.00
8	AQU 002	Attapol Adulyasas, Hanan Yaring, Supakan Niyomtham	The Smart Aquaponic System Using Internet of Things	15.00-15.10
9	FRS 001	Jessy Nayasari	Diversity and Abundance of the Fagaceae Family Based on Altitudes in the Bukit Kaba Nature Tourism Park	15.10-15.20
10	FRS 002	Surya Mardiana	Conservation for Early Childhood	15.20-15.30
Q & A Session				15.30-15.40

ROOM 3: Food Science and Technology

Moderator: Arina Fatharani, S.T.P, M.Sc.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	FST 001	Fachrur Rozi, Daimon Syukri, Rina Yenrina, Milda Yolanda, Fauzan Azima	Evaluation of Proximate Qualities of Stored Ground Red Chili (<i>Capsicum Annum L.</i>) In Fish Pond Media	13.30-13.40
2	FST 002	Jesika Oktavia	Characteristics of Physical Properties, Organoleptics, Total Microbes and Oxidation Levels of Beef Meatballs Added with Sebangun Leaf Flour (<i>Melastoma malabathricum L.</i>) With Different Particle Sizes	13.40-13.50
3	FST 004	Ahmad Luqman Hakim, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Characteristics and Antioxidant Activity of Beluntas Leaf Tea (<i>Pluchea indica L.</i>) with Addition of Ginger as a Functional Beverage	13.50-14.00
Q & A Session				14.00-14.10
4	FST 005	Akmal Auladi Najib, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Isothermic Sorption and Shelf Life Prediction of Chinese Pellucida Leaf (<i>Peperomia pellucida L.</i>) through Critical Moisture Content Approach	14.10-14.20
5	FST 006	Andri Susanto, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Characteristics of Fish Nugget with Addition of Beluntas Leaves (<i>Pluchea Indica L.</i>) as Functional Food	14.20-14.30
6	FST 007	Asvi Khirnika, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Prediction of Minimal Processing (<i>Solanum melongena L.</i>) Shelf Life using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model	14.30.14.40
Q & A Session				14.40-14.50
7	FST 008	Choerul Insani, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Shelf Life Prediction of Candied Nutmeg (<i>Myristica fragrans</i>) using the ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model	14.50-15.00
8	FST 009	Diyah Palupi Estiningrum, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Isothermic Sorption Modeling and Shelf Life Prediction of Butterfly Pea Flower Tea (<i>Clitoria Ternatea L.</i>) in Plastic Packaging	15.00-15.10
Q & A Session				15.10-15.20

ROOM 4: Food Science and Technology

Moderator: Ika Gusriani, S.TP., MP.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	FST 010	Fatimah Wahdah, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Characteristics and Antioxidant Activity of Beluntas Leaf Tea (<i>Pluchea indica</i> L.) with Addition of Roselle (<i>Hibiscus sabdariffa</i> L.) as Functional Beverage	13.30-13.40
2	FST 011	Ika Nur Arifah, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Isothermic Sorption of Purslane Leaves and Shelf Life Prediction using Accelerated Shelf Life Test (ASLT) with Arrhenius Model	13.40-13.50
3	FST 012	Ilyas Subekti, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Modeling of Isothermic Sorption and Shelf Life Prediction of Guava Leaf Tea (<i>Psidium guajava</i>) in Plastic Packaging	13.50-14.00
Q & A Session				14.00-14.10
4	FST 013	Inarotul Zahroh, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Shelf Life Prediction for Minimal Processing of Tomatoes (<i>Solanum lycopersicum</i> L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model	14.10-14.20
5	FST 014	Irenna Putri Ariesta, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Shelf Life Prediction for Minimal Processing of Green Onions (<i>Allium fistulosum</i> L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model	14.20-14.30
6	FST 015	Khasan Maskuri, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Modeling of Isothermal Sorption and Shelf Life Estimation of Beluntas Leaves (<i>Pluchea indica</i> L.) through the Critical Moisture Content Approach	14.30-14.40
Q & A Session				14.40-14.50
7	FST 016	Laelatul Qodriyah, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Characteristics and Antioxidant Activity of Beluntas Leaf Tea (<i>Pluchea indica</i> L.) with Krokot Leaves (<i>Portulaca oleracea</i>) as Functional Beverage	14.50-15.00
8	FST 017	Lukmanto Lukmanto, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Formulation of Soy Milk with Addition of Emprit Ginger (<i>Zingiber officinale</i>) Extract and Fragrant Pandan Leaf (<i>Pandanus amaryllifolius</i>) Extract	15.00-15.10
9	FST 018	Ma'rifahtul Muslihah, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Characteristics of Chicken Nuggets with Addition of Purslane Leaves (<i>Portulaca oleracea</i> L.) as a Functional Food Product	15.10-15.20
Q & A Session				15.20-15.30

ROOM 5: Food Science and Technology

Moderator: Nur Lina Maratana Nabiu, S.Pi., M.Si.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	FST 019	Rina Sukesi, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Shelf Life Prediction for Minimal Processing of Melon (<i>Cucumis melo</i> L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model	13.30-13.40
2	FST 020	Risfa Aulia, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Characteristics and Antioxidant Activity of Candied Nutmeg (<i>Myristica fragrans</i>) with Addition of Citric Acid	13.40-13.50
3	FST 021	Sofia Nur Janah, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Shelf Life Prediction for Beluntas Leaf Tea (<i>Pluchea indica</i> L.) and Rosella (<i>Hibiscus sabdariffa</i>) using Accelerated Shelf Life Test (ASLT) Method with Arrhenius Model	13.50-14.00
Q & A Session				14.00-14.10
4	FST 022	Syella Aditya Ayuningtyas, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Influence of Drying Temperature on Antioxidant Content of Beluntas Leaf Tea (<i>Pluchea indica</i> L.)	14.10-14.20
5	FST 023	Yulia Eva Alfiana, Kavadya Syska, Asti Dewi Nurhayati, Ropiudin Ropiudin	Shelf Life Prediction of Minimal Processing for Crystal Guava (<i>Psidium guajava</i> L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model	14.20-14.30
6	FST 024	Figa Mahira, Ropiudin Ropiudin, Abdul Mukhlis Ritonga	Characteristics of Non-Carbonized Corn Cob and Teak Leaf Biopellets with Adhesive Composition and Drying Temperature Treatments	14.30-14.40
Q & A Session				14.40-14.50
7	FST 025	Nicky Dwi Safitri, Ropiudin Ropiudin, Susanto Budi Sulisty, Kavadya Syska	Performance and Drying Characteristics Analysis of Crystalline Coconut Sugar using a Rotating Rack Type Dryer	14.50-15.00
8	FST 026	Ratu Prameshwari, Ropiudin Ropiudin, Dian Windy Dwiasih, Kavadya Syska	Characteristics of Carbonized Corn Cob and Rice Husk Biopellets with Tapioca Starch and Clay Adhesive	15.00-15.10
9	FST 027	Toibah Toibah, Ropiudin Ropiudin, Dian Windy Dwiasih, Kavadya Syska	Characteristics of Carbonized Biopellets from a Mixture of Corn Cobs, Corn Stalks, and Teak Leaves with Clay Soil Binder	15.10-15.20
Q & A Session				15.20-15.30

ROOM 6: Agriculture Engineering

Moderator: Ana Ariasari, S.Pi., M.Sc.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	AEG 001	Alfaen Haydar Salim, Ropiudin Ropiudin, Priswanto Priswanto, Kavadya Syska	Energy Requirement Projection for Agricultural Machinery in Paddy Cultivation using LEAP Software in Baturraden District, Banyumas Regency Central Java Province	13.30-13.40
2	AEG 002	Arkan Naufal, Ropiudin Ropiudin, Priswanto Priswanto, Christian Soolany, Kavadya Syska	Design Analysis of Wind Power Plant for Vannamei Shrimp Farming in the Coastal Area of Cilacap using the Homer Application	13.40-13.50
3	AEG 003	Awaludin Ammar Farhan, Ropiudin Ropiudin, Susanto Budi Sulisty, Kavadya Syska	Modification of Combustion System in Rotating Shelf Corn Dryer Energized by Coconut Shell Briquettes	13.50-14.00
Q & A Session				14.00-14.10
4	AEG 004	Darul Rafik, Ropiudin Ropiudin, Ike Sitoresmi, Kavadya Syska	Development of an Self-Sustaining Energy System in Rice Milling Processes using a Closed-Loop Model at the Teaching Industry of Jenderal Soedirman University	14.10-14.20
5	AEG 005	Deviya Diah Indriyani, Ropiudin Ropiudin, Ike Sitoresmi, Kavadya Syska	Energy Audit on Premium Rice Production at Rice Milling Unit (RMU) Teaching Industry of Jenderal Soedirman University	14.20-14.30
6	AEG 006	Dimas Arifin, Ropiudin Ropiudin, Priswanto Priswanto, Kavadya Syska	Analysis of Solar Power Plant Design for Irrigation in Kaliurip Village, Banyumas Regency using Homer Software	14.30.14.40
Q & A Session				14.40-14.50
7	AEG 007	Falih Augo Rallyansyah, Ropiudin Ropiudin, Krissandi Wijaya, Christian Soolany, Kavadya Syska	Design and Development of Solar Energy for DFT (Deep Flow Technique) Minihydroponic System with Microcontroller based Automatic Nutrient Control for Red Lettuce	14.50-15.00
8	AEG 008	Farras Nuzila Mahfi, Ropiudin Ropiudin, Krissandi Wijaya, Christian Soolany, Kavadya Syska	Design and Development of Minihydroponics Deep Flow Technique (DFT) System with Solar Energy with Manual Control on Lettuce (<i>Lactuca Sativa L.</i>)	15.00-15.10
9	AEG 009	Fuad Faisal Fadholi, Ropiudin Ropiudin, Priswanto Priswanto, Kavadya Syska	Projection of Banyumas Regency's Electrical Energy Requirements and Electrical Energy Provision at the Ketenger Hydroelectric Power Plant using LEAP Software	15.10-15.20
Q & A Session				15.20.15.30

ROOM 7: Agriculture Engineering

Moderator: Kartika Utami, SP., M.Sc.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	AEG 010	Kurnia Uswatun Khasanah, Ropiudin Ropiudin, Ike Sitoresmi, Kavadya Syska	Energy Audit in Corn Grits Production Process: a Case Study of Sida Maju Mill, Serayu Larangan Village, Purbalingga Regency, Central Java	13.30-13.40
2	AEG 011	Muhammad Fadel, Ropiudin Ropiudin, Priswanto Priswanto, Kavadya Syska	Design Analysis of Solar Power Generation for Agricultural Irrigation in Gumelem Wetan Village, Banjarnegara Regency using HOMER Software	13.40-13.50
3	AEG 012	Panca Cahya Utami, Ropiudin Ropiudin, Susanto Budi Sulistyio, Kavadya Syska	Characteristics of Drying Corn Seeds (Zea Mays L.) using Rotating Rack Dryers with Biomass Energy	13.50-14.00
Q & A Session				14.00-14.10
4	AEG 013	Ratna Fadila, Ropiudin Ropiudin, Ike Sitoresmi, Kavadya Syska	Energy Audit of Broiler Chicken Farms at the Teaching Farm of Jenderal Soedirman University	14.10-14.20
5	AEG 014	Yanuar Fatahul Razak, Ropiudin Ropiudin, Priswanto Priswanto, Kavadya Syska	Integrated Planning of Electrical Energy and Rice Farming Irrigation using LEAP Software at Ketenger Hydropower Plant in Central Java Province	14.20-14.30
6	AEG 015	Alif Farras Alghalin	Use of CD Paper as an Alternative Substrate in Tomato Seed Viability Testing	14.30-14.40
Q & A Session				14.40-14.50
7	AEG 016	Kalupea Areef, Bureerat Anuchart, Hama Yameelah	Remote Controlled Vehicle Solar cell powered Pesticides Sprayer	14.50-15.00
8	FST 028	Wahyu Ikhfalina, Ropiudin Ropiudin, Abdul Mukhlis Ritonga	Characteristics of Carbonized Biopellets from a Mixture of Corn Cobs and Teak Leaves with Treatment of Drying Temperature and Adhesive Content	15.00-15.10
9	FST 029	Sitihananee Masae, Suraida Dueramae, Roselawatee Toae	Bambara Groundnut (Vigna subterranea) - Texture Vegetable Protein Proportions can Provide Chunky in Meat Analogue Burger	15.10-15.20
Q & A Session				15.20-15.30

ROOM 8: Animal Science

Moderator: Woki Bilyaro, S.Pt., M.Si.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	ASC 001	Muhammad Zikwan, Erika Oktarina, Novita Ruth Nababan	Evaluation Of Advantages and Disadvantages Of Different Culture Media Of Black Solder Fly	13.30-13.40
2	ASC 002	Jepri Susanto	Growth performance of male laying hens fed diets containing BSF maggot meal (<i>Hermetia illucens</i>)	13.40-13.50
3	ASC 003	Wanang Tri Dinarko	The Effect of Using BSF Maggot Flour (<i>Hermetia illucens</i>) In Rations on Growth Performance of Ketarras Chickens (0-6 Weeks)	13.50-14.00
Q & A Session				14.00-14.10
4	ASC 004	Joyce Othaviolina Turnip	Effect of Humic Acid and Herbs Supplementation on Drinking Water Consumption in Bali Cattle with Palm Sludge Feed	14.10-14.20
5	ASC 005	Erma Ide Elismawati	The Effect of Different Forage Balances on the Performance of Bali Cattle	14.20-14.30
6	ASC 006	Andini Surya Kencanawati	“Evaluation of Biosecurity Practices in Livestock Management: A Comprehensive Study on Isolation, Sanitation, Vaccination, and Traffic Control” (Case study in Beef Cattle Farms Giri Mulya Village, Giri Mulya District, North Bengkulu Regency)	14.30.14.40
Q & A Session				14.40-14.50
7	ASC 007	Ifta Kartika Suryadila	EVALUATION OF CALVES REARING MANAGEMENT: A COMPREHENSIVE STUDY ON DIET, HEALTH, AND HOUSING	14.50-15.00
8	ASC 008	Venny Hafazeka	Evaluation of Feed Management on Smallholder Beef Cattle Farming System (Case study in Giri Mulya village)	15.00-15.10
9	ASC 009	Aghfirda Nur Rizki	Evaluation of Farming Practices for Young Goats in Smallholder Farming System: A Case Study in Giri Mulya Village, Giri Mulya District, North Bengkulu Regency	15.10-15.20
10	ASC 016	Ebrahim, E. H., Bakr, A. M., Gath, N. K., and Khorram del, Y	Effects of Supplementing Pennyroyal (<i>Mentha Pulegium L.</i>) and Fenugreek on Japanese Quail Performance	15.20.15.30
Q & A Session				15.40-15.50

ROOM 9: Agribusiness

Moderator: Hariz Eko Wibowo, S.Tat., M.M.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	AGB 001	Dela Natasya	Cost Structure Analysis and Economic Scale in Dried Fish MSMEs in Bengkulu Province	13.30-13.40
2	AGB 002	Windi Tetra Yuningsih, Ketut Sukiyono, Bambang Sumantri	Analysis Cost Structure and Economic of Scale of Rice Farming in Different Land Area Strata in Bengkulu Province	13.40-13.50
3	AGB 003	Rolinly Wakarandi, Ketut Sukiyono, Nola Windirah	Dynamics of Household Food Security and Its Determinants in Bengkulu Province	13.50-14.00
Q & A Session				14.00-14.10
4	AGB 004	feri feriyanto	Consumer preferences for fruit in muara bangkahulu district, bengkulu city	14.10-14.20
5	AGB 005	Ahmad Ramadan Iqbal	Competitive and Comparative Competitiveness Of Dried Fish MSMEs In Bengkulu Province	14.20-14.30
6	AGB 006	Teresha Amanda	Analysis Of The Use and Substitution of Production Factors of Paddy Rice Farming in Different Strata of Land Area in Bengkulu Province	14.30.14.40
Q & A Session				14.40-14.50
7	AGB 007	Shobery Yulanda Putra	ANALYSIS OF PREMIUM MELON MARKETING STRATEGIES IN BENGKULU CITY (CASE STUDY AT TOBOPONIK COMPANY BENGKULU CITY)	14.50-15.00
8	AGB 008	Apisith - Chailap	Long-kong production and agricultural extension needs under the violent incidents in Narathiwat province: A case study of farmers who participated in the Learning Center for Agricultural Production at To-lang village Tanjong-Limo sub-district, Ra-Ngae dis	15.00-15.10
9	AGB 009	Ana Meinawati	Analysis of the Trading System and Decision Making of Oil Palm Farmers in the Sale of Fresh Fruit Bunches (Case Study: Sibak Village, Ipuh District, Mukomuko Regency)	15.10-15.20
Q & A Session				15.20.15.30

ROOM 10: Animal Science and Agribusiness

Moderator: An Nisa Nurul Suci, S.Si., M.Si.

NO	Abstract_ID	AUTHORS	TOPIC	TIME
1	ASC 010	Abdulah Fajri	Biosecurity Practices on Goat Farms: A Comprehensive Study in Girimulya Village, North Bengkulu Regency	13.30-13.40
2	ASC 011	Tlangkas Fadilah	Evaluation of Feeding Management on Goat Farms (case study of Giri Mulya village)	13.40-13.50
3	ASC 012	Adinda Katarina Br. Ketaren, Sudarsyah Bimo Saputra	Management Analysis Of Broiler Chicken Rearing At Mr. Bimo Farm Pt Semesta Mitra Sejahtera Central Selebar, Betungan, Bengkulu	13.50-14.00
Q & A Session				14.00-14.10
4	ASC 013	Raihan Syahputra	Evaluation of Animal Protein Consumption in Indonesia Pre- during and Post-COVID-19 Pandemic	14.10-14.20
5	ASC 014	Sofa Sopiah, Hilda Susanty, Eli Ratni	Prevalance of Subclinical Mastitis and Total Plate Count (TPC) of Goat Milk on Farm X in Padang City, West Sumatra	14.20-14.30
6	ASC 015	Jakkhaphan Pitchayapipatkul	Prediction of Marbling Fat in Live Fattening Beef by Ultrasound and Aging Period on Meat Quality	14.30.14.40
Q & A Session				14.40-14.50
7	AGB 010	Nia Audina Sitompul	Analysis Of Purchasing Decisions And Customer Satisfaction Levels With Kebab "Pisangqu" Products In Bengkulu City	14.50-15.00
8	AGB 011	Lala Yuliavita Silvani	Analysis Of Production And Allocative Efficiency Of Paddy Rice Farming In Different Irrigation Systems In Bengkulu Province	15.00-15.10
9	AGB 012	Nurul Aziemah Majid	Factors Influence the Acceptability of Smart Farming Technologies among Youth in Agriculture	15.10-15.20
10	AGB 013	Ghani Setiawan Cahyadi	The Factors that Affect the Existence of Agricultural Farmer Groups (A Study in Cempaka Permai Urban-Village, Gading Cempaka Sub-District, Bengkulu City)	15.20-15.30
Q & A Session				15.30-15.40



ABSTRACTS OF ROOM 1

PLANT SCIENCE

Abstracts_ID: PLS 001

Weed Seed Bank at Various Soil Depths in Mature Phase Oil Palm Plantation on The Coastal Land of Bengkulu

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ABSTRACT: The high population and diversity of weed species in the mature phase of oil palm plantation is determined mainly by the deposit of weed seeds in the soil. Seed bank are a significant investment in weeds and essential in developing effective weed control strategies. This study aims to identify and analyze weed seed bank from oil palm plantations' mature phases at different soil depths in 3 coastal districts of Bengkulu. This research was conducted from January to April 2023 in Muara Bangkahulu District, Pondok Kelapa District, and Air Napal District (Bengkulu Coastal District, Indonesia). Germination of the weed seed bank is carried out in the greenhouse of the Agronomy Laboratory, Faculty of Agriculture, University of Bengkulu on plastic trays measuring 24 cm x 30 cm (LxD) grouped based on 3 soil depths consisting of 0-10, 11-20, and 21-30 cm and 3 sub-districts consisting of Muara Bangkahulu, Pondok Kelapa, and Air Napal, with 3 replications. The results showed that 19 species of weeds were growing from the seed bank, with 4 weed species with the highest populations, namely *Fimbristylis tomentosa* Vahl., *Fimbristylis miliacea* (L.) Vahl, *Echinochloa colonum* (L.) Link and *Cyperus rotundus* L. The highest number of weed seed bank that grew was found at a depth of 0-10 cm. There are differences in the number of weed seed bank in the three sub-districts at depths of 0-10 cm, 11-20 cm, and 21-30 cm. The composition, population, and dry weight of weeds further decrease with an increase in soil depth. Weed seed bank communities growing between sites and depths are not uniform, as indicated by C values $\leq 75\%$, except between depths of 0-10 cm and 11-20 cm.

Key words: weed, Bengkulu coastal area, soil depth, palm oil plantation, seed bank

Abstracts_ID: PLS 002

Identification of Weeds and Their Potential as Organic Fertilizer in Pondok Kelapa District, Central Bengkulu, Indonesia

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ABSTRACT: Weeds are plants that are in areas where their growth is undesirable, because they negatively affect the mother plant and the surrounding environment, both biological and economical. This research aims to identify the types and dominance of broadleaf weeds, grasses, sedges and ferns in Pondok Kelapa District, Central Bengkulu, Indonesia, as well as identify the weeds that have the potential to be used as organic fertilizer. The research was conducted in November-December 2022 which included 15 location points (L1-L15) in Pondok Kelapa District, Central Bengkulu, Indonesia. This research uses observational survey method by conducting field orientation followed by weed data collection and vegetation analysis. At each location, 6 sample plots with an area of 1m x 1m were sampled. The results of weed identification showed 65 species of weeds consisting of 37 species of broadleaf weed, 17 species of grasses, 8 species of sedges and 3 species of ferns. The grass weed *Axonopus compressus* (Sw.) Beauv. and *Leersia hexandra* Sw. it is the adominant weed with the highest summed dominance ratio of 13.85% and 11.21%, respectively. At each site there are differences in the composition, density and dry weight of weeds. There are 31 species of weeds that have the potential as organic fertilizer both from broadleaf weeds, grasses, sedges and ferns with N content ranging from 0.68% -4.36%; P between 0.05 – 1.22% and K between 0.81% – 2.58%. Other types of weeds identified are also potential sources of organic fertilizer.

Key words: organic matter, dominant, identification, Pondok Kelapa, weed potential

Abstracts_ID: PLS 003

Identification of Weeds and Their Potential as Organic Fertilizer in Muara Bangkahulu District, Bengkulu City, Indonesia

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ABSTRACT: Weeds are plants whose existence is undesirable. Many types of weeds grow throughout the region, including in the Muara Bangkahulu sub-district. On the other hand, weeds also have the potential to be a source of organic fertilizer. The research aims to identify broad-leaf weeds, grasses, sedges and determine the dominant weeds in Muara Bangkahulu District and their potential as a source of organic fertilizer. The research was conducted in Muara Bangkahulu District, Bengkulu City, Indonesia, from November 2022 to January 2023 in two stages: sampling and sample analysis. The vegetation analysis approach was used to collect samples at 14 different locations. Each site has 6 sample plots with 1 m × 1 m and 10 cm x 10 cm sample plot sizes. The results of the observations were analyzed in the Agronomy laboratory at Bengkulu University. The research results showed 94 types of weeds, namely 44 broad-leaved weeds, 30 grasses, 18 ferns, and 11 sedges. *Leersia oryzoides* is the dominant weed with the highest SDR (Summed Dominance Ratio) of 10.38%. According to the research findings, there are 30 different types of weeds with N, P, and K levels ranging from 0.18% - 3.46%, 0.05% - 10.22%, and 0.64% - 2.58%, respectively. Weeds containing N, P, and K have been examined and shown to be suitable for use as organic fertilizer. Other weeds identified have the potential to be organic fertilizer sources as well.

Key words: weed dominance, weed, weed identification, Muara Bangkahulu, organic fertilizer

Abstracts_ID: PLS 004

Weeds diversity at various soil depths in four sub-districts of Bengkulu, Indonesia

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ABSTRACT: Weeds are all types of plant vegetation that cause disturbances in specific locations concerning human objectives. Weed diversity is essential in determining weed control measures in cultivated land. This research aims to explain the dominance of weeds from the seed bank at different soil depths in four coastal administrative regions of Bengkulu. The research was conducted from January 2023 to April 2023. This study involved a germination test of the seed bank with soil samples taken from four districts (Muara Bangkahulu District, Teluk Segara District, Pondok Kelapa District, and Air Napal District) at three soil depths (0 - 10 cm, 11 - 20 cm, and 21 - 30 cm), with a total of 12 soil samples. The data obtained were analyzed using Summed Dominance Ratio (SDR) and Community Coefficient (C) analysis. The study results showed that 27 species of weeds were growing in the four districts and at different depths, comprising 12 broadleaf weeds, 8 grass weeds, and 7 sedge-type weeds. Muara Bangkahulu District had 15 species, Teluk Segara District had 16 species, Pondok Kelapa District had 14, and Air Napal District had 13. At a depth of 0-10 cm, there were 24 species, while at depths of 11-20 cm and 21-30 cm, there were 19 and 13 species, respectively. Sedge-type weeds had the highest density at all soil depths in all districts. However, the seed bank species that grew in the four districts at various soil depths were not uniform or homogeneous, as indicated by a coefficient value of $C \leq 75\%$.

Keywords: seed bank, soil depth, weed diversity

Abstracts_ID: PLS 005

Weed Seed Banks at Various Soil Depths on Coconut and Rubber Lands of Bengkulu Coast, Indonesia

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ABSTRACT: Seed bank refers to the dormant seeds of weeds in the soil that can develop into weed individuals if environmental conditions are supportive. The seed bank is a crucial factor in developing future weed management methods. This research aims to determine the population diversity and species composition of weed seed banks in coconut and rubber plantations at different soil depths on the coast of Bengkulu, Indonesia. This research was conducted from January 2023 to April 2023. Soil samples were collected from coconut and rubber plantations in the Muara Bangkahulu District, the Pondok Kelapa District, and the Air Napal District. Weed seeds were germinated and their growth were evaluated in the greenhouse of the Agronomy Laboratory at the University of Bengkulu's Faculty of Agriculture. The research results showed that the diversity of the seed bank in coconut and rubber plantations at various soil depths indicates uneven weed growth. The species composition of weed seed banks in coconut and rubber plantations varied at different soil depths. There were 15 weed species growing in coconut plantations, with the highest density of *Fimbristylis miliacea* (L.) Vahl. at a depth of 0–10 cm, followed by *Cyperus rotundus* L. at a depth of 11–30 cm. In rubber plantations, there were 12 weed species, with the highest density of *Commelina diffusa* Burm. F. at all soil depths (0–30 cm).

Key words: coconut land, rubber land, soil depth, weed, seed bank

Abstracts_ID: PLS 006

Identification and Domination of Weeds in Air Napal District, North Bengkulu Regency

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ABSTRACT: Weeds are unwanted plants that might harm the primary crop, hence their presence is undesired. Both directly and indirectly, these losses might be felt. Weed management such as weed control is expected to reduce losses caused by weeds. Vegetation analysis must be performed to determine the relationship between weeds and vegetation and the dominant weeds in order to enhance knowledge about weeds and provide a variety of control options in the field. The study was carried out in Air Napal District, North Bengkulu Regency, from August 2022 to December 2022. The weed vegetation was analyzed using a square approach with a plot size of 1m x 1m of 80 plots, 30 plots on oil palm plantations, 18 plots on rubber and coconut plantations and 12 plots on swamp land and rice field. The data was analyzed to determine the relative frequency (RF), relative density (RD), and relative dry weight (RDW) of a weed species, which were then used to calculate the summed dominance ratio (SDR). The research discovered that the dominant weeds in Air Napal District are *Ottochloa nodosa* (Kunth.) Dandy at 25.34% on rubber plantations, *Melastoma affine* D. Don at 9.44% on oil palm plantations, *Borreria alata* Aubl at 12.70% on coconut plantations, *Isachne globosa* (Thunb.) O.K was 14.43% on swamp land and *Fimbristylis miliacea* (L.) Vahl was 42.84% on lowland rice field.

Key words: Identification, Domination and Air Napal District.

Abstracts_ID: PLS 007

Reduction of N-P-K Fertilizer Using Bio-Organic Fertilizer and Silicate Minerals in Green Mustard Cultivated in Coastal Saline Soil

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ABSTRACT: Salinity stress causes physiological and biochemical disturbances in plants, leading to disrupt growth and yield. Silicate minerals (bentonite and zeolite) and bio-organic fertilizer enriched with PGPR can be used as ameliorants to reduce the impact of these disturbances while reducing the application of N-P-K fertilizer. Therefore, this research aims to determine clay minerals and doses of bio-organic fertilizer enriched with PGPR that are able to reduce N-P-K fertilizer in green mustard in coastal saline soil. This polybag trial was carried out from March to April 2023 on Jl. W.R. Supratman RT 01, RW 01 Pematang Gubernur Village, Muara Bangkahulu District, Bengkulu City. Treatments were replicated 3 times and arranged in split plot scheme with 2 factors under completely randomized design. The first factor was silicate minerals (bentonite and zeolite) as the main plot and the second factor was the combined application of N-P-K and BIO fertilizer as a subplot consisting of 6 levels, namely control, 100% N-P-K, 75% N-P-K + 25% BIO, 50% N-P-K + 50% BIO, 25% N-P-K + 75% BIO and 100% BIO. Each replication consisted of 12 experimental units, so that in 3 replications there were 36 experimental units. Each experimental unit consisted of 3 plants so the totals were 108 plants. Application of 75% N-P-K + 25% BIO in sandy saline soil ameliorated with bentonite produces plant height, plant dry weight, shoot dry weight, leaf dry weight, root dry weight and leaf fresh weight equivalent to the recommended 100% N-P-K application. The use of BIO fertilizer can reduce the need for N-P-K fertilizer by 25% without reducing the growth and yield of mustard greens.

Key words: *Mustard greens, Coastal Saline Soil, Silicate Minerals, Bio-Organic Fertilizer*

Abstracts_ID: PLS 008

Effects of Drought Stress on Soybean Root Morphological

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ABSTRACT: Drought stress occurs due to an absence between water availability and water requirements, and the plant's response to stress varies depending on the type. Drought stress can affect root shape. This study aimed to see how drought stress affected the morphology of soybean roots. This study was conducted at the Bengkulu University Faculty of Agriculture greenhouse using a Completely Randomized Design (CRD) with two components, namely soybean variety (Gepak Kuning, Grobogan, Deja 2) and PEG 6000 concentration (0%, 10%, 20%). The study's findings revealed that the variety and PEG 6000 substantially impacted the variables root length, root diameter, fresh and dried root weight, and T/A ratio. The variables root diameter fresh and dried root weight were affected by the interaction between cultivars and PEG. Significant changes were found in the interaction of soybean types with 10% PEG concentration. The Gepak Kuning variety (4.95 mm) and Deja 2 (5.03 mm) had the best root diameter variables; the Deja 2 variety had the best fresh and dried root weight (3.50 g, 1.88 g). Meanwhile, the interaction between types and 20% PEG concentration revealed statistically significant changes in root diameter characteristics. The Grobogan variety (3.16 mm) and Deja 2 (2.58 mm) had the best root diameter, but there was no significant difference in fresh and dry root weight.

Key words: abiotic stress, polyethylene glycol, screening, vegetative stage

Abstracts_ID: PLS 009

Ethephon Foliar Application at Off-Season: Impact on Vegetative and Flowering of Harumanis Mango (*Mangifera Indica* L.)

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ABSTRACT: In cultural practice of harumanis tree, plant growth regulator such as paclobutrazol is applied at late vegetative stage to induce flowering. However, starting from 2020 to 2023, there is a sharp yield reduction due to the unexpected weather condition. The unexpected heavy rain causes the Harumanis flower to drop by turning it into dark color before falling from the panicle. This situation is worse when the pollination did not yet occur and the flower begins to drop. Due to this problem, ethephon was chosen as an alternative plant growth regulator for flower induction. Ethephon is an ethylene releasing agent that able to mediate many aspects in plant growth and development such as shoot development and flower induction. Thus, the objective of this study is to observe the influence of ethephon application during off-season on vegetative growth stage and flower induction of harumanis tree. A total of 32 Harumanis trees (3 years old) in Research Plot, Unit Ladang Universiti Teknologi MARA Perlis were treated with ethephon in September 2023 by foliar spray until run-off on the plant canopy. Treatments were arranged according to randomized completely block design with three different concentrations of ethephon and being diluted 2 hours before application.; 400 ppm, 600 ppm, and 800 ppm and control (without application). The parameters were recorded weekly: stomatal density, chlorophyll content, number of leaves, number and length of buds, number of flower panicle, length and width of flower panicle, day to flowering. The vegetative growth stages shows significant difference among concentrations applied where number of leaves is higher with 800 ppm. Meanwhile, there is no flower formation after two months of ethephon application. As from this study, it can be concluded that the ethephon application influence the growth performance and physiological characteristics of harumanis tree by extend the vegetative growth and delay flower induction.

Key words: Harumanis mango, ethephon, plant growth regulator, vegetative growth, flower induction



ABSTRACTS OF ROOM 2

AGRICULTURE AND FORESTRY

Abstracts_ID: PLS 010

The Application of Spent Mushroom Lumps for the Growth and Yield of *Agrocybe cylindracea*

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ABSTRACT: Yanagi mushroom (*Agrocybe cylindracea*) has a high value of nutrient and good taste. The price of this mushroom is also high. This research aimed to study the application of spent mushroom lump from *Pleurotus pulmonarius* cultivation for the growth and yield of Yanagi mushroom. The experimental design was completely randomized design with 5 treatments and 4 replications with 10 mushroom bags per replication. The treatments were as follow: Trt1 spent mushroom lump, Trt2 spent mushroom lump and rubber saw dust 2:1, Trt3 spent mushroom lump and rubber saw dust 1:1, Trt4 spent mushroom lump and rubber saw dust 1:2, and Trt5 rubber saw dust. All treatment were mixed with 5% rice brand, 2% lime, and 0.2% magnesium sulfate and 60% moisture. The mixture was put in the plastic 6.5x12.5 bag after that sterile and add the Yanagi spawn. The mushroom bags were leaf in the greenhouse. The number of the day that mycelium grown full the bag, the number of fruiting body per bag, the fresh weight of fruiting body per bag, and the percentage of biological efficiency (%B.E.) were recorded. The results showed that Trt2 showed the best of the number of the day that mycelium grown full the bag at 38.12 days. There are no significant differences in statistical analysis in the number of fruiting body per bag, the fresh weight of fruiting body per bag, and the percentage of biological efficiency (%B.E.) of all treatments. However, Trt4 trended to show the high fresh weight of fruiting body per bag at 22.3 grams per bag. This study showed that the spent mushroom lump can use as main substrate or mixed with rubber saw dust for Yanagi mushroom cultivation.

Key words: Yanagi mushroom, *Agrocybe cylindracea*, Spent mushroom lump, Substrate, biological efficiency

Abstracts_ID: PLS 011

Effects of different LEDs light spectrum on the growth of *Philodendron* “Cherry Red” plantlets under Aseptic Condition

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ABSTRACT: This study aimed to investigate the impact of three distinct light sources including full spectrum LED daylight (57.5 $\mu\text{mol m}^{-2}\text{s}^{-1}$), full spectrum LED chip with IR/UV light (350.059 $\mu\text{mol m}^{-2}\text{s}^{-1}$), and full spectrum LED chip with warm white light (380.682 $\mu\text{mol m}^{-2}\text{s}^{-1}$) on the growth of *Philodendron* “Cherry Red” shoot cultured under sterile conditions for a duration of 12 weeks. The results indicated that the height, root number, root lengths, and canopy width of *Philodendron* “Cherry Red” exhibited no significant differences across all three light sources. Moreover, the utilization of full spectrum LED chip with warm white light led to the highest leaf number. Regarding leaf colour, to be cultured under full spectrum LED daylight gave the highest average colour score of 3.95, characterized by dark green leaves. In contrast, to be cultured under the full spectrum LED chip with IR/UV light resulted in an average colour score of 2.75, indicating green-yellow leaves, while to be cultured under the full spectrum LED chip with warm white light had the lowest average colour score of 1.80, indicating yellow leaves.

Key words: LED light, *Philodendron* “Cherry Red”, Growth Performance, Light Spectrum, Leaf colour.

Abstracts_ID: PLS 012

The Influence of Paclobutrazol (PBZ) On the Flowering and Physiological Characteristics of 3 Years Old *Mangifera indica* CV. Harumanis During Off-season

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ABSTRACT: In Malaysia, Perlis is known as one of the main states for mango production specifically the Harumanis variety since it has a unique taste as compared to other types of mangoes. Nevertheless, due to unfavourable climatic condition such as unpleasant raining and windy season, the production of Harumanis decreased extremely. *Mangifera indica* cv. Harumanis is a fruit crop that require hot weather in order to have high yielding. Unfortunately, the occurrence of heavy rain had prevented the production by causing flowers to fall off before pollination begin. Hence, the application of plant growth regulator paclobutrazol (PBZ) was used to induced the flowering of Harumanis mango crops and enhance their vegetative growth. This experiment took place at the research plot in Unit Ladang UiTM Perlis Campus Arau starting from the first week of September 2023 using the Complete Randomized Block Design (CRBD). A total of 32 trees of 3 years old Harumanis mango trees were drenched with four different concentrations of PBZ hormone (T1: control without treatment, T2: 5 mL L⁻¹/tree of PBZ, T3: 10 mL L⁻¹/tree of PBZ, and T4: 15 mL L⁻¹/tree of PBZ). The number of leaves, number of new leaves, length of stems, formation of new bud, chlorophyll concentration, stomatal density, total leaf area, number of panicles, length of panicles, width of panicles, and number of matured panicles are the instances of parameters that were observed weekly. The vegetative parameters have significant difference between concentrations since number of new leaves produced was the highest with 10 mL L⁻¹/tree of PBZ. Besides, most trees with 5 mL L⁻¹/tree of PBZ, 10 mL L⁻¹/tree of PBZ, and 15 mL L⁻¹/tree of PBZ produced flowers 6 weeks after PBZ application. In conclusion, PBZ application positively influenced the flowering and physiological characteristics of Harumanis trees by stimulating off-season flowering.

Key words: paclobutrazol, off season, induced flower, Harumanis mango, vegetative growth

Abstract_ID: PLS 13

Colchicine effects on Morphological Characters of Xanadu (*Philodendron xanadu*) under Aseptic Condition

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ABSTRACT: The study aimed to induce morphological variations in Xanadu through colchicine treatments. Explants underwent by immersion in colchicine solutions (2.4 and 4.8 mg/L) for 24 hours, followed by culture on MS medium, and direct culture on MS medium supplemented with colchicine (2.4 and 4.8 mg/L) under sterile conditions for 45 days. Results showed a 100% survival rate across all treatments. The explants cultured on MS medium with 4.8 mg/L colchicine exhibited the highest average height (3.15 cm), while those immersed in 2.4 mg/L colchicine resulted in the highest leaf count (9.00) and root growth (4.87). After transplantation into a greenhouse for 30 days, Xanadu seedlings from explants treated with 4.8 mg/L colchicine displayed the tallest average height (3.52 cm.). The control group had the highest leaf count with an average of 6.53 leaves. Additionally, Xanadu seedlings from explants soaked in colchicine at a concentration of 2.4 mg/L exhibited the widest average leaf width at 1.52 cm. Regarding stomatal characteristics, Xanadu seedlings derived from explants soaked in 4.8 mg/L colchicine and directly cultured on MS medium mixed with 4.8 mg/L colchicine had larger stomata. Moreover, the stomatal density was higher in all colchicine treated groups compared to the control group.

Key words: Colchicine, *Philodendron Xanadu*, Xanadu, Morphological variation, Morphological Character.

Abstracts_ID: AGV 001

Identification Of Tsunami Inundation Distribution For Mapping Of Evacuation Paths Along The Coast Bengkulu City

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ABSTRACT: The sea and coastal waters of Bengkulu City are a subduction zone for the Indo-Australian and Eurasian plates with a shift of 4-6 cm/year. This situation causes Bengkulu Province to have the potential for an earthquake with a magnitude above 6 on the Richter Scale (SR) which could trigger a tsunami. Therefore, non-structural supporting Tsunami disaster mitigation efforts are needed, such as creating a Tsunami exposure model. This research aims to create a Tsunami impact model and to determine the environmental influence on settlements on the coast of Bengkulu City during the Tsunami wave. Tsunami exposure modeling uses the remote sensing method using equations developed by Berryman (2006) using ArcGIS software and utilizing the cost distance function. The parameters used are coastline obtained from the RBI map, slope parameters obtained from DEM, and roughness coefficient parameters obtained from land cover with Supervised classification using Landsat 8 OLI Image data recorded in November 2022. This research uses a run scenario up to a Tsunami 11 meters along the coastline by BNPB standards in Bengkulu City. The research results show that the level of exposure to tsunami waves in Bengkulu City consists of high, medium, and low danger zones, which are dominated by 7 sub-district administrations which tend to be in lowland areas and directly border the coastline of a total of 9 sub-districts in Bengkulu City. The results of modeling the impact of Tsunami inundation and environmental influences, can be used as a reference for creating a Tsunami evacuation route map for Bengkulu City.

Key words: *Bengkulu Province, Tsunami, Remote Sensing.*

Abstracts_ID: AGV 002

OVIPOSITION BEHAVIOR PREFERENCES OF YELLOW STEM BORER (*SCIRPOPHAGA INCERTULAS*) ON VETIVER GRASS (*VETIVERIA ZIZANOIDES*) AND LOCAL RICE VARIETIES

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ABSTRACT Stem borers are particularly problematic, causing over 70% of paddy yield losses. Therefore, sustainable pest management strategies incorporating ecological engineering concepts were introduced. In this study, vetiver grass (*Vetiveria zizanioides*) was used as a trap crop to manage the stem borers population in the paddy field. This study investigated the oviposition preference of yellow stem borers (*Scirpophaga incertulas*) between vetiver grass and three local paddy varieties: MR297, MR269, and PadiU Putra 1. Three treatments with 4 replicates were employed in a randomized complete block design (RCBD). A total number of 240 female *S. incertulas* were released into the net cages of the different treatments. The number of egg masses on the host plants was calculated and the results were insignificant. However, *S. incertulas* preferred to lay eggs on the adaxial of *V. zizanioides*. Interestingly, the larvae fed on *V. zizanioides* died, but the larvae which fed on the paddy displayed almost similar growth rates and sizes. This study suggested that *V. zizanioides* has a pronounced lethal effect on the *S. incertulas* larvae.

Abstracts_ID: AQU 001

Carbapenem-Resistant Bacteria In The Aquatic Environments

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ABSTRACT: The emergence of carbapenem-resistant bacteria (CRB) has become an urgent public health concern as carbapenem is the last resort antibiotic to treat bacterial infections. However, little is known about their prevalence in the aquatic environment. This study aimed to determine the prevalence of CRB and their carbapenem resistance genes (*bla*KPC, *bla*OXA-48-like, *bla*IMP and *bla*NDM) in lake and river waters. The isolation and enumeration of CRB were carried out using mSuperCARBA agar whereas the detection of carbapenem resistance genes were determined using multiplex polymerase chain reaction. The resistance profile of the CRB was determined using antimicrobial susceptibility testing (AST). The abundance of CRB ranged from 2054 to 13376 cfu 100 mL⁻¹ and 443 to 20695 cfu 100 mL⁻¹ for lakes and rivers, respectively. A total of 349 isolates, 49.0 % of the isolates were resistant to all four carbapenems, 10.9% were resistant to three carbapenems and 9.2% of the isolates were susceptible to all carbapenems. Twenty-nine CRB identified were mainly from genera *Pseudomonas*, *Enterobacter* and *Stenotrophomonas*. A higher abundance of CRB was detected in Kelana Jaya lake (27.1%) downstream of Selangor River (29.0%). The *bla*OXA-48-like was the most detected genes among CRB.

Key words: carbapenem, CRB, aquatic environment, river, lake, carbapenemase genes

Abstracts_ID: AQU 002

The Smart Aquaponic System Using Internet of Things

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ABSTRACT: This project proposes a Smart Aquaponic System (SAqS) driven by the Internet of Things (IoT) technology. It improves an aquaponic system, which is a cultivation method that combines aquaculture (growing fish in a closed environment) with hydroponics (growing plants in water without soil). The SAqS is composed of two functions, namely automatic control and real-time reporting. The SAqS has a ESP8266 microcontroller as a processing unit connected to the Internet via WiFi.

For the fishery part, the SAqS automatically feeds fish daily until the feeding box gets empty, and then the system notifies a farmer through a line application. Furthermore, the water's dissolved oxygen and pH status are regularly sensed and transmitted up to the cloud for real-time monitoring and further analysis. These values are considered to maintain the suitable levels of 7-11 mg/L for dissolved oxygen and 5-7 for pH, using an oxygen pump and adjusting the feeding amount. For the plant part, the SAqS controls the water flow circularly between the fishery and plant parts using a water pump. The water level is regulated in a high-low fashion to save energy consumed by the water pump and let oxygen get through the plant's roots. In addition, temperature, humidity, and light intensity are also monitored.

The experimentation was performed by glowing tilapia and green oak for fishery and plant parts, respectively, as system products. The productivities of the traditional and smart aquaponic systems were compared. The result of the fishery product after cultivation for 90 days shows that the size and weight of the SAqS is greater than the traditional system with 32 cm. long and 800g. of weight, compared to 20 cm. long and 300g. Moreover, the result of green oak shows that the productivity for the SAqS is greater than the traditional system with 14 cm. of canopy width and 10-12 numbers of leaf, compared to 12 cm. of canopy width and 5-6 numbers of leaf.

Keywords: aquaponics, internet of things, automatic feeding system, tilapia, green oak

Abstracts_ID: FRS 001

DIVERSITY AND ABUNDANCE OF THE *FAGACEAE* FAMILY BASED ON ALTITUDES IN THE BUKIT KABA NATURE TOURISM PARK

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ABSTRACT: This study investigates the *Fagaceae* family, housing 700+ global species. In the Malesia region, *Nothofagus*, *Castanopsis*, *Lithocarpus*, *Quercus*, and *Trigonobalanus* constitute about 180 species, notably 112 in Indonesia: environmental factors, especially altitude and climate, shape *Fagaceae* distribution. Height emerges as a crucial factor, inversely correlating with species presence. Conducted at Bukit Kaba Nature Tourism Park, the research explores *Fagaceae* diversity across altitudes. Altitude-based transects covered 1300 to 1500 meters above sea level, each 10 x 10-meter plot divided into 10 units spaced 5 meters apart. Findings showcase varying *Fagaceae* diversity. At 1300 meters, 3 species from 2 genera totalled 15 individuals, with a Diversity Index of 1.04. At 1400 meters, 3 species from 2 genera amounted to 13 individuals, a Diversity Index of 1.01. At 1500 meters, 2 species from 1 genus had 17 individuals, yielding a Diversity Index 0.61. Dominant species at each elevation were identified. At 1300 meters, *Lithocarpus hystrix* led with an Important Value Index (INP) of 134.28%. At 1400 meters, *Castanopsis javanica* prevailed with an INP of 144.56%. At 1500 meters, *Lithocarpus confragosus* dominated, recording an INP of 237.55%. Overall, *Lithocarpus confragosus* maintained dominance across altitudes with an INP of 124.70% and 15 individuals.

Keywords: altitude, bukit kaba, *fagaceae*, important value index

Abstracts_ID: FRS 002

CONSERVATION FOR EARLY CHILDHOOD

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ABSTRACT: Conservation is a global issue that requires attention from all levels of society. Conservation attitude is a person's outlook on life that upholds the principles of conservation as a severe effort to preserve and protect the environment. This conservation attitude is not something that can be learned immediately but requires an early learning phase. Educating the younger generation on conservation principles is an essential step in maintaining the sustainability of life. This study demonstrates the importance of conservation education in early development in shaping sustainable environmental awareness. It also focuses on effective techniques for incorporating conservation learning into the early childhood curriculum. Various approaches and best practices are considered, including the use of stories, educational games and hands-on activities that can capture children's attention and increase their interest in the environment. In addition, the positive impact of conservation education on children's overall development is discussed, including an increased sense of responsibility, an understanding of the importance of biodiversity, and the development of social skills in conservation. Therefore, incorporating conservation learning into early childhood education not only helps prepare future generations to be environmentally conscious but also acts to help build a strong foundation for global environmental sustainability.

Keywords: Conservation, early childhood, environmental sustainability



ABSTRACTS OF ROOM 3

FOOD SCIENCE AND TECHNOLOGY

Abstracts_ID: FST 001

Evaluation of Proximate Qualities of Stored Ground Red Chili (*Capsicum Annum L.*) In Fish Pond Media

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ABSTRACT: This study aimed to compare the characteristics of ground red chili peppers stored in fish pond media with those stored in the refrigerator. Chili peppers weighing 100 g each were packed in Low Density Polyethylene (LDPE) plastic clips and then repackaged in Polypropylene (PP) plastic clips. The packaged ground chilies were then immersed into a fish pond with a depth of ± 60 cm. The remaining ground red chilies were stored in the refrigerator at $\pm 6^{\circ}\text{C}$. The quality of the ground chili was assessed for 10 weeks by testing water content, pH, total titratable acid, antioxidant activity, water activity, color, and total plate count. At week 10, the characteristics of ground red chili stored in fish ponds were found to be comparable to refrigerated storage. The test values showed moisture content of 65.54%, pH of 5.10, total titratable acid of 0.24%, antioxidant activity of 26.38%, aw measurement of 0.77, color ($^{\circ}\text{Hue}$) of 31.53/red, and total plate number of 1.8×10^5 colonies/g. Based on these results, it is hypothesized that a Modified Atmosphere Packaging (MAP) system has occurred during the storage process in fish ponds due to the possible formation of nitrogen in the water from fish and metabolic waste of fish feed. Further research is needed to assess the potential role of fish ponds as a sustainable storage medium for ground red chili.

Key words: Ground red chili, storage duration, pond media storage.

Abstracts_ID: FST 002

Characteristics of Physical Properties, Organoleptics, Total Microbes and Oxidation Levels of Beef Meatballs Added with Sebangun Leaf Flour (*Melastoma malabathricum* L.) With Different Particle Sizes

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ABSTRACT: Meatballs are among the most popular processed meat products in Indonesia. Unfortunately, meatballs are perishable food products, making them susceptible to deterioration and contamination by microbes. With the growing consumer awareness of healthy food products, the preference for natural preservatives and antimicrobials has become the primary choice within today's society, displacing synthetic agents. One of the potentials to be applied to the meatball is Senduduk (*Melastoma malabathricum* L.) leaf powder (SLP). This research was aimed to evaluate the physicochemical, organoleptics, total microbes and oxidation level of meatball added with different particle size of SLP. Four treatments were utilized in the research, designed under a Completely Randomized Design: meatballs without any SLP addition (P0), meatballs with SLP of 30-mesh (P1), 40-mesh (P2), and 50-mesh (P3) particle sizes. The meatball formula was meat, tapioca, ice cubes, salt, pepper powder, garlic powder, BHT (Butylated Hydroxytoluene), 4 M HCL, TBA reagent, 90% glacial acetic acid, distilled water and leaf flour, sitting, BPW, PCA, petri dish. The results of this study indicated that P1-P3 significantly increased the cooking yield but led to a decrease in color, aroma, and preference among the panelists for the meatballs. The particle size of SLP did not have any significant effect on the pH value, water content, emulsion stability (expressed by oil release), tenderness, meatball taste sensation, but it the increased in elasticity. Furthermore, there was no observed effect on the total microbe count and TBA number. It can be concluded that particle sizes (30, 40, and 50-mesh) did not significantly affect most of the physicochemical properties, total microbe count, or the oxidation of the meatballs.

Key words: Meatballs, Organoleptics, Oxidaton, Physicochemical, Total Microbes.

Abstracts_ID: FST 004

Characteristics and Antioxidant Activity of Beluntas Leaf Tea (*Pluchea indica* L.) with Addition of Ginger as a Functional Beverage

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ABSTRACT: The leaves of *Pluchea indica* L., commonly known as beluntas, have been acknowledged for their therapeutic potential in traditional medicine. Rich in bioactive compounds, including antioxidants, beluntas contributes to various health benefits. Previous studies have highlighted the substantial antioxidant capacity of beluntas leaf tea extract. As awareness of health benefits rises, functional beverages are gaining popularity, and the addition of ginger as a supplementary ingredient is explored for its potential to enhance the nutritional value and health advantages of such beverages. This research aimed to investigate the characteristics and antioxidant activity of beluntas leaf tea with the addition of crushed ginger as a functional beverage. Additionally, the research sought to formulate the optimal combination of beluntas leaf tea and ginger for a functional beverage. The research utilized a Completely Randomized Design (CRD) with two factors: beluntas leaf tea and crushed ginger, each having three treatments. Beluntas leaf treatments comprised 70%, 50%, and 30% (w/w), while crushed ginger treatments included 30%, 50%, and 70% (w/w). Data were subjected to Analysis of Variance (ANOVA) followed by Duncan's test at a 5% significance level to discern significant treatment effects. Results revealed that treatment B3J3 exhibited the highest pH value at 7.17. The treatment with the highest antioxidant value was B2J3, recording 3.21%, with a beluntas leaf to crushed ginger weight ratio of 1:1.4 g/g. Treatment B1J1 displayed the highest tannin content at 21.85%, while the highest yield was achieved in treatment B2J1 at 0.956%. Organoleptic tests identified B2J2 as the preferred treatment, scoring 2.84, indicating a preference over other treatments. In conclusion, the addition of ginger to beluntas leaf tea influenced its physical, chemical, and antioxidant characteristics. This functional beverage demonstrates potential as a health-promoting drink, capitalizing on the combined benefits of beluntas leaves and ginger.

Abstracts_ID: FST 005

Isothermic Sorption and Shelf Life Prediction of Chinese Pellucida Leaf (*Peperomia pellucida* L.) through Critical Moisture Content Approach

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ABSTRACT: Chinese pellucida leaf (*Peperomia pellucida* L.) is esteemed for its health benefits, commonly used in traditional medicine and culinary practices. This research focuses on modeling the isothermic sorption of Chinese pellucida leaves and estimating their shelf life using the Accelerated Shelf Life Test (ASLT) with a critical moisture content approach. The research objectives were twofold: firstly, to determine the isothermic sorption curve model for Chinese pellucida leaves, and secondly, to estimate their shelf life using the critical moisture content approach. The ASLT method employed saturated salts (NaOH, MgCl₂, and KCl) to maintain consistent humidity within an airtight container at 30°C. The isothermic sorption curve was determined using the most suitable model within the water activity range (aw) of 0.07 to 0.84. Dried Chinese pellucida leaves were packaged in aluminum foil, HDPE, and PP containers for shelf life estimation at 10°C and 30°C. The Oswin model, demonstrating equation type III, accurately modeled the isothermic sorption curve for dried Chinese pellucida leaves. Shelf life varied with packaging material: at 30°C, aluminum foil exhibited 257 days, HDPE 23 days, and PP 48 days. At 10°C, the shelf life extended to 345 days for aluminum foil, 31 days for HDPE, and 65 days for PP. In conclusion, this research provides a valid mathematical model for the isothermic sorption of Chinese pellucida leaves. The critical moisture content approach effectively predicts shelf life, contributing to optimal storage strategies. This research aids in utilizing Chinese pellucida leaves in culinary and traditional medicine applications.

Key words: chinese violet leaves, critical moisture content, isothermic sorption, shelf life

Abstracts_ID: FST 006

Characteristics of Fish Nugget with Addition of Beluntas Leaves (*Pluchea Indica* L.) as Functional Food

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ABSTRACT: Functional food products have garnered significant attention, particularly among individuals seeking both palatable and nutritionally enriched dietary options. Among these, fish nuggets, as a processed fish product, emerge as a promising candidate for fulfilling daily nutritional requirements. This research aims to explore the quality characteristics of fish nuggets enriched with beluntas leaves and assess the fat and protein content, positioning them as functional food products. The study adopted a Completely Randomized Design (CRD) with two factors: beluntas leaves and mackerel, each featuring three distinct treatments. Beluntas leaf concentrations comprised 10%, 20%, and 30%, while mackerel concentrations included 90%, 80%, and 70%. Data analysis utilized Analysis of Variance (ANOVA), with subsequent application of the Duncan 5% test if significant treatment effects were observed. Results indicated that the most effective treatment for protein content was I1B1, exhibiting an average value of 88.66%. Meanwhile, the I1B3 treatment yielded the optimal fat content, averaging at 0.161%. This suggests that elevating the percentage of beluntas addition positively correlated with increased crude protein content, while significantly reducing fat content. This research contributes valuable insights into formulating fish nuggets with the incorporation of beluntas leaves as functional food. The outcomes serve as a foundational platform for advancing the development of functional food products based on fish, offering not only diverse flavors but also enhanced nutritional value. Such innovations align with the growing demand for healthier food alternatives and underscore the potential of fish-derived functional foods to address nutritional deficiencies and promote overall well-being. As consumer preferences continue to evolve towards healthier choices, the findings of this study pave the way for future developments in the functional food industry, emphasizing the importance of nutritional enrichment in processed fish products.

Key words: beluntas leaves, nugget, fish, functional food

Abstracts_ID: FST 007

Prediction of Minimal Processing (*Solanum melongena* L.) Shelf Life using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model

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ABSTRACT: The determination of the shelf life of a product plays a crucial role as a parameter for consumer safety and quality. Eggplant (*Solanum Melongena* L.) minimally processed, as one of the food products undergoing minimal heating, requires a specialized approach in estimating its shelf life. The aim of this research is to determine the shelf life of minimally processed eggplant using the Accelerated Shelf Life Test (ASLT) with the Arrhenius model and to assess the quality changes occurring during storage of minimally processed eggplant. The research method involved the Accelerated Shelf Life Test (ASLT) with the Arrhenius model in estimating the shelf life of minimally processed eggplant. The estimated shelf life used minimally processed eggplant packaged in plastic wrapping, HDPE (High-Density Polyethylene), and PP (Polypropylene), then stored at temperatures of 10°C and 30°C for 9 days. Observations were made by weighing samples every day to measure weight loss. The results showed that at 10°C, plastic wrapping experienced higher weight loss compared to HDPE and PP packaging. Meanwhile, at 30°C, HDPE packaging had higher weight loss compared to PP and wrapping packaging. The estimated shelf life of minimally processed eggplant for 9 days at a storage temperature of 10°C was 25 days for plastic wrapping, 12 days for HDPE, and 7 days for PP. For a storage temperature of 30°C, the estimated shelf life was 11 days for plastic wrapping, 5 days for HDPE, and 4 days for PP. From the shelf life calculation using ASLT with the Arrhenius approach, minimally processed eggplant stored in plastic wrapping had a longer shelf life compared to HDPE (High-Density Polyethylene) and PP (Polypropylene) packaging. This research contributes to understanding the shelf life of minimally processed eggplant, integrating the ASLT method with the Arrhenius model as an effective tool for a rapid and accurate evaluation of quality changes in food products.

Key words: shelf life, minimal processing, eggplant wren, ASLT, arrhenius

Abstracts_ID: FST 008

Shelf Life Prediction of Candied Nutmeg (*Myristica fragrans*) using the ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model

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ABSTRACT: The determination of the shelf life of food products plays a crucial role in ensuring product quality and safety. Candied nutmeg (*Myristica Fragrans*), as a processed spice product, requires careful assessment of its shelf life. The objective of this research is to determine the quality changes in candied nutmeg using the Accelerated Shelf Life Test (ASLT) with the Arrhenius model and to estimate the shelf life of candied nutmeg using the ASLT Arrhenius model. The shelf life test method uses the ASLT approach with Arrhenius. The experimental design in this research employs a Completely Randomized Design (CRD) method with 2 factors. Factor 1 is the 3 types of packaging (K), and factor 2 is the 2 room storage temperatures (T). The parameters used are temperatures, i.e., 10°C and 30°C, and packaging parameters, namely aluminum foil packaging, HDPE, and PP. The observed variables are pH levels and vitamin C levels. The results show that the pH content experiences the greatest decrease in quality at 30°C with a pH value of 2.25 in the K3 sample (PP packaging). The estimated shelf life of candied nutmeg during 28 days of storage is aluminum foil packaging at 10°C for 74 days, at 30°C for 12 days. HDPE packaging at 10°C for 66 days, at 30°C for 17 days, and PP packaging at 10°C for 62 days, at 30°C for 29 days. The findings of this research can serve as a foundation for the food industry in managing production, distribution, and marketing of candied nutmeg. Additionally, the results of shelf life estimation can be used as a reference for product formulation improvement, optimal storage, and ensuring the sustainability of product quality in various storage environments.

Key words: candied nutmeg, shelf life, ASLT, arrhenius model, product quality

Abstracts_ID: FST 009

Isothermic Sorption Modeling and Shelf Life Prediction of Butterfly Pea Flower Tea (*Clitoria Ternatea* L.) in Plastic Packaging

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ABSTRACT: The herbal beverage industry is rapidly growing, with one of the notable products being butterfly pea flower tea (*Clitoria Ternatea* L.). This tea is renowned for its high antioxidant content and potential health benefits. Water sorption by the product can be a crucial parameter in assessing quality and shelf life. Modeling of the isothermic sorption is conducted to understand the behavior of water absorption by the product and predict quality changes during storage. Plastic packaging is chosen as a variable that potentially affects the rate of sorption and the shelf life of the product. The aim of this research is to determine the most suitable isothermic sorption curve model for butterfly pea flower tea and to predict the shelf life of butterfly pea flower tea in various types of packaging using the Arrhenius approach. The research method in determining the isothermic sorption of butterfly pea flower tea uses the GAB model. The GAB model is an appropriate model that describes the characteristics of isothermic sorption. The prediction of the shelf life of butterfly pea flower tea packaged in aluminum foil, HDPE, and PP is then stored at temperatures of 10°C and 30°C. The results of the study indicate that the MRD Adsorption value of the GAB model is 5.6. The shelf life of butterfly pea flower tea for 4 weeks at a storage temperature of 10°C in aluminum foil packaging at 10°C is 310 days, at 30°C is 178 days, HDPE packaging at 10°C is 119 days, and at 30°C is 75 days, PP packaging at 10°C is 118 days, and at 30°C is 205 days. From the results of the shelf life calculation using ASLT with the Arrhenius Approach, butterfly pea flower tea stored in aluminum foil packaging has a longer shelf life. The findings of this research provide a deep insight into the interaction between butterfly pea flower tea and plastic packaging in the context of water sorption. The generated isothermic sorption model can be a useful tool to plan and optimize product storage conditions.

Key words: butterfly pea flower, packaging, isothermic sorption, arrhenius, plastic



ABSTRACTS OF ROOM 4

FOOD SCIENCE AND TECHNOLOGY

Abstracts_ID: FST 010

Characteristics and Antioxidant Activity of Beluntas Leaf Tea (*Pluchea indica* L.) with Addition of Roselle (*Hibiscus sabdariffa* L.) as Functional Beverage

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ABSTRACT: Functional beverages are increasingly drawing attention from health-conscious consumers, emphasizing the utilization of natural ingredients rich in bioactive compounds. One identified plant with health-promoting properties is the beluntas leaf (*Pluchea Indica* L.), and roselle (*Hibiscus Sabdariffa* L.). The combination of beluntas leaves and roselle in tea production holds the potential to create a functional beverage that is not only refreshing but also offers health benefits. This research aims to determine the characteristics of beluntas tea with the addition of roselle and identify the optimal formulation for beluntas tea with the addition of roselle concerning antioxidant activity. The research method employs a factorial Completely Randomized Design (CRD) with three replications to discern the optimal combination formulations for beluntas tea with roselle addition concerning antioxidant activity and characteristics. These characteristics include sensory aspects (color, aroma, taste, preference) and physicochemical properties such as moisture content, pH, yield, and tannin content. The study comprises 27 treatments with two factors: beluntas leaf powder concentrations (70%, 60%, 50%) and roselle powder concentrations (50%, 40%, 30%). Results from the study indicate that the optimal treatment for moisture content is B1R3 with values of 7.21% and 7.77%. The optimal treatment for pH is B1R3 with a value of 1.89. The optimal treatment for yield is B1R1 with 73%. The best treatment for antioxidant activity is B2R1 with a value of 90.43%. The best treatment for tannin is B3R2 with a value of 22.56%. The highest values for aroma, taste, color, and aftertaste parameters are obtained in treatments B2R1, B2R1, B1R2, and B3R1, respectively. This investigation provides valuable insights into the development of functional beverages using natural ingredients, specifically exploring the synergistic effects of beluntas and roselle.

Key words: antioxidants, beluntas, rosella. tea, functional beverage

Abstracts_ID: FST 011

Isothermic Sorption of Purslane Leaves and Shelf Life Prediction using Accelerated Shelf Life Test (ASLT) with Arrhenius Model

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ABSTRACT: The plant *Portulaca oleracea* L., commonly known as purslane, has long been recognized as a rich source of nutrients and has the potential as a functional food due to its bioactive compound content. The main challenge in harnessing the health potential of this plant lies in maintaining its quality during storage, considering its complex physical and chemical properties. The research method employed in this resarch involved the application of Accelerated Shelf Life Test (ASLT) to assess the shelf life of purslane leaves under accelerated storage conditions. The kinetic parameters of the reaction were analyzed using the Arrhenius Model, generating predictions for the shelf life of the product. The determination of the sorption isotherm of purslane tea was conducted using the GAB (Guggenheim, Anderson, de Boer) model, employing saturated salt solutions at a range of water activities (a_w) from 0.05 to 0.09 at a temperature of 30°C. The estimated shelf life was conducted on dried purslane tea, packaged in Aluminum foil, High-Density Polyethylene (HDPE), and Polypropylene (PP), and stored at temperatures of 10 and 30 degrees Celsius for four weeks, with observations made every seven days. The research findings indicated the successful application of the Arrhenius Model in predicting the shelf life of purslane leaves, with activation energy serving as a critical indicator in assessing product stability. The results also revealed that the equilibrium moisture content increased with the rise in a_w values at constant temperature. The GAB model was found to be somewhat accurate in describing the sorption characteristics of purslane tea. The estimated shelf life of purslane tea over four weeks at 10°C storage was as follows: Aluminum foil (days), HDPE (days), and PP (days), and at 30°C storage: Aluminum foil (days), HDPE (310 days), and PP (528 days). These findings provide insights into the sorption characteristics of purslane leaves and their relevance to product quality changes during storage. The application of ASLT with the Arrhenius Model serves as an effective predictive tool for determining the shelf life of purslane leaves in a relatively short period.

Key words: isothermics sorption, krokot leaves, shelf life, prediction, arrhenius

Abstracts_ID: FST 012

Modeling of Isothermic Sorption and Shelf Life Prediction of Guava Leaf Tea (*Psidium guajava*) in Plastic Packaging

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ABSTRACT: Guava (*Psidium guajava*) plants are widely recognized as a source of raw material for tea, boasting nutritional value and health benefits. Guava leaves contain bioactive compounds such as polyphenols, vitamins, and antioxidants, providing high health potential. Therefore, the processing of guava leaves into tea represents an innovation that can enhance the added value of this plant. The objective of this research is to determine the most suitable model for the isothermic sorption curve of guava leaf tea and to estimate its shelf life with various types of packaging using the Accelerated Shelf Life Test (ASLT) method with the Arrhenius model. The method of estimating shelf life uses the Accelerated Shelf Life Test (ASLT) with the Arrhenius Model. Reaction kinetic parameters are analyzed to gain a deep understanding of the changes in product quality under accelerated storage conditions. The shelf life estimation involves guava leaf tea packaged in aluminum foil, HDPE plastic, and PP plastic, stored at temperatures of 10°C and 30°C for 28 days. The research results show that the appropriate model for the isothermic sorption curve of guava leaf tea is the Oswin model with an MRD value for adsorption of 0.4 and an MRD value for desorption of 1.5. The predicted shelf life values for guava leaf tea during 28 days of storage are as follows: aluminum foil packaging at 10°C for 836 days and at 30°C for 451 days, HDPE plastic packaging at 10°C for 363 days and at 30°C for 326 days, while PP plastic at 10°C is 751 days and at 30°C is 304 days. The research results are expected to contribute to a deeper understanding of the interaction between guava leaf tea, plastic packaging, and storage conditions. The modeling of isothermic sorption and shelf life estimation can serve as a foundation to optimize storage strategies and enhance the quality of guava leaf tea products, particularly in the context of sustainability and meeting quality standards.

Key words: guava leaves, isothermic sorption, tea, shelf life

Abstracts_ID: FST 013

Shelf Life Prediction for Minimal Processing of Tomatoes (*Solanum lycopersicum* L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model

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ABSTRACT: Minimal processing of tomatoes (*Solanum lycopersicum* L.) have become increasingly popular due to their ability to preserve nutritional content and organoleptic characteristics. The minimal processing method offers advantages in minimizing natural changes in the product; however, the main challenge lies in maintaining the quality and freshness of the product during storage. This research aims to determine the shelf life of minimally processed tomatoes using the ASLT method with the Arrhenius model and to identify quality changes that occur during storage of minimally processed tomatoes. The Accelerated Shelf Life Test (ASLT) method proves to be an effective approach for predicting the shelf life of a product rapidly. The Arrhenius model, detailing the relationship between temperature and the rate of chemical reactions, is employed to analyze the kinetics of reactions during accelerated storage. The combination of these two methods provides an accurate overview of the product's shelf life. In this research, minimally processed tomatoes were packaged using wrapping plastic, HDPE (High-density polyethylene), and PP (Polypropylene), then stored at temperatures of 10°C and 30°C. The research results indicate that the highest pH value at 10°C with the wrapping packaging treatment was 3.6, and at 30°C, the highest pH value with wrapping packaging was also 3.6. The highest weight loss of tomato fruit at 10°C was observed with the wrapping packaging treatment at 1.25%, and at 30°C, the highest weight loss was 1.55% with wrapping packaging. The highest total soluble solids value was 4.27% with wrapping packaging at 10°C, and at 30°C, the highest total soluble solids in tomato fruit was 4.1% with wrapping packaging. The estimated shelf life of minimally processed tomatoes obtained results for the longest shelf life was wrapping packaging with an estimated shelf life of 15 days at 10°C, while the shortest shelf life was 2 days at 30°C with HDPE packaging. These findings provide insights into the stability of minimally processed tomato products and lay the foundation for the development of optimal storage strategies. The application of ASLT with the Arrhenius model can assist the food processing industry in enhancing efficiency and product quality, particularly in the case of minimally processed tomato products.

Key words: shelf life, minimal processsing, tomato, ASLT, arrhenius

Abstracts_ID: FST 014

Shelf Life Prediction for Minimal Processing of Green Onions (*Allium fistulosum* L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model

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ABSTRACT: Minimal processing of green onions (*Allium fistulosum* L.) have become increasingly popular in the food industry. The minimal processing method offers advantages in preserving the nutritional and organoleptic characteristics of green onions. However, quality changes during storage pose a significant challenge in ensuring sustainability and product quality. This research aims to 1) assess the quality changes in minimally processed green onions using the Accelerated Shelf Life Test (ASLT) method with the Arrhenius model, and 2) determine the shelf life of minimally processed green onions using the ASLT method with the Arrhenius model. The ASLT method was applied with accelerated storage temperature variations to hasten the quality changes in the product. The Arrhenius model was employed to analyze the kinetics of reactions occurring during accelerated storage, providing an accurate prediction of the shelf life. Shelf life estimation was conducted using green onions packaged in plastic wrapping, HDPE plastic, and PP plastic, stored at temperatures of 10°C and 30°C for 9 days with observations every 3 days. Data were analyzed using ANOVA (Analysis of Variance) with a 5% confidence level. If the ANOVA results indicated significant differences, the Honest Significant Difference (HSD) test was performed. The research results showed that at 10°C, green onions stored in plastic wrap packaging exhibited the highest level of damage compared to HDPE and PP packaging. Meanwhile, at 30°C, minimally processed green onions in HDPE packaging experienced the highest level of damage compared to plastic wrap and PP packaging. The shelf life estimation using the ASLT method with the Arrhenius model indicated that the shelf life of green onions in wrapping packaging at 10°C tends to be longer compared to other packaging methods. These findings provide insights into the stability of minimally processed green onion products and lay the foundation for the development of optimal storage strategies. The application of ASLT with the Arrhenius model can assist the food processing industry in improving efficiency and product quality, particularly for minimally processed green onion products.

Key words: minimal processing, arrhenius, ASLT, leeks, shelf life

Abstracts_ID: FST 015

Modeling of Isothermal Sorption and Shelf Life Estimation of Beluntas Leaves (*Pluchea indica* L.) through the Critical Moisture Content Approach

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ABSTRACT: The beluntas plant (*Pluchea indica* L.) holds potential as a source of bioactive compounds rich in valuable substances. The diversity of these compounds adds value to the plant, benefiting both health and various other applications. In the context of utilization, the focus of this research is on beluntas leaves due to their potential bioactive compounds that can support various applications in the food and pharmaceutical industries. The objectives of this study are related to the sorption isotherm of beluntas leaves to determine shelf life, identify the most appropriate sorption isotherm curve model for beluntas leaves, and determine the shelf life of beluntas leaves in various packaging using the critical moisture content approach. The research method employed the Accelerated Shelf Life Test (ASLT), a rapid, straightforward, and cost-effective method for determining shelf life. Commonly used ASLT methods include the Arrhenius model and the critical moisture content model. Variables measured in this study include initial moisture content determination, water activity, equilibrium moisture content determination, modeling of sorption isotherm curves, and shelf life estimation. The results showed that in aluminum foil packaging, the shelf life of dried beluntas leaves stored at 30°C was 158 days. For Polypropylene (PP) packaging, the shelf life of dried beluntas leaves was 55 days, and for High-Density Polyethylene (HDPE) packaging, it was 92 days. When stored at 10°C, the shelf life in aluminum foil packaging was 212 days, for PP packaging, it was 124 days, and for HDPE packaging, it was 213 days. The estimated shelf life of beluntas leaves using the ASLT model with the critical moisture content approach provides valuable insights into the relationship between sorption isotherms and the shelf life of beluntas leaves. This information serves as a crucial foundation for the development of optimal storage strategies and the maintenance of product quality. The application of this model can also serve as a valuable guide for the processing industry of beluntas products.

Key words: isothermic sorption, prediction, shelf life, beluntas leaves, critical moisture content

Abstracts_ID: FST 016

Characteristics and Antioxidant Activity of Beluntas Leaf Tea (*Pluchea indica* L.) with Krokot Leaves (*Portulaca oleracea*) as Functional Beverage

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ABSTRACT: Functional beverages are gaining increased attention among consumers due to their recognized additional health benefits. Beluntas leaf tea (*Pluchea indica* L.) is an intriguing subject of research, given its potential bioactive compound content that may positively impact health. The addition of krokot leaves (*Portulaca Oleracea*) as an additional ingredient in beluntas leaf tea formulations can provide nutritional variety and additional bioactive compounds. This research aims to determine the characteristics and antioxidant activities of beluntas leaf tea with krokot leaves and identify the optimal formulation for this tea. Extraction methods involved variations in the mix ratios of beluntas and krokot leaves to achieve an optimal tea formulation. Physical and chemical characteristics of beluntas leaf tea with added krokot leaves were evaluated, including color, taste, aroma, polyphenol content, and antioxidant activity. Treatments in this research involved different concentrations of beluntas leaves (80%, 60%, and 40%) and krokot leaves (60%, 40%, and 20%). The results of the research demonstrated that the formulation of beluntas and krokot leaves significantly influenced acidity (pH) and antioxidant activity but did not have a significant effect on yield and organoleptic tests. The highest moisture content in wet basis was 7.40% in treatment B3K1, while the highest moisture content in dry basis was 8.00% in treatment B3K1. The highest pH value was recorded in B1K1 with an average of 7.49. The highest yield was 80% in treatment B1K1, the highest antioxidant content was 74.57% in treatment B3K1, and the highest tannin content was 21.83% in treatment B1K1. The best treatment based on organoleptic tests for color was in treatment B3K1, aroma in B3K1, taste in B2K2, and aftertaste in treatments B2K2 and B3K2. This research provides an in-depth understanding of the potential of functional beverages resulting from the combination of beluntas and krokot leaves. The identified characteristics and antioxidant activities offer a foundation for developing functional beverage products that are not only flavorful but also beneficial for consumer health.

Key words: antioxidant, beluntas, krokot, tea, functional beverage

Abstracts_ID: FST 017

Formulation of Soy Milk with Addition of Emprit Ginger (*Zingiber officinale*) Extract and Fragrant Pandan Leaf (*Pandanus amaryllifolius*) Extract

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ABSTRACT: The food industry continues to evolve in response to the growing demand for innovative products that are not only delicious but also provide health benefits. Soy milk has become a popular alternative for individuals seeking a nutritious plant-based protein source. In an effort to enhance the value and offer intriguing flavor variations, research on the formulation of soy milk with the addition of natural ingredients such as ginger (*Zingiber officinale*) and pandan leaves (*Pandanus amaryllifolius*) is relevant. This study aims to develop a liquid soy milk formulation enriched with ginger and pandan leaf extracts and analyze the characteristics and quality of the formulated soy milk. The research methodology employed a Completely Randomized Design (CRD). The experimental design was conducted as a procedural step and implementation technique before the actual research. The experiment involved treatments using 200 g of soybeans and 2000 ml of water. The main concentration treatments for ginger (J) and pandan leaves (P) were 50%:50%, 70%:30%, and 30%:70%. The results of the study indicated that, in terms of aroma, there was a tendency for the panelists to prefer a concentration ratio of 30% ginger to 50% pandan. The highest preference level for taste was obtained in treatment P13 with a value of 4.59, and the lowest was in treatment P112. The aftertaste preference level for liquid soy milk was highest in treatment P2J2 with a value of 4.55, and the lowest in treatment P1J2 with a value of 2.91. The average preference level for aftertaste was in the range of 2.91 to 4.55. This study contributes to the diversification of plant-based milk products by utilizing natural ingredients such as ginger and pandan leaves, providing healthier and more appealing options for consumers.

Key words: formulation, liquid milk, soy, ginger, pandan leaves

Abstracts_ID: FST 018

Characteristics of Chicken Nuggets with Addition of Purslane Leaves (*Portulaca oleracea* L.) as a Functional Food Product

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ABSTRACT: Functional food products not only provide sensory satisfaction but also offer additional health benefits due to specific nutrient content or bioactive compounds. Chicken nuggets, as a popular processed meat product, present an intriguing option for development as a functional food product. Purslane leaves (*Portulaca oleracea* L.) emerge as a potential natural ingredient for incorporation into functional food products. Traditionally recognized for its significant nutritional content, including fiber, vitamins, and bioactive compounds such as antioxidants, purslane leaves align with the increasing interest in functional foods. Research on the use of purslane leaves as an additive in processed meat products, particularly chicken nuggets, becomes relevant and beneficial. The objective of this research is to determine the sensory characteristics of chicken nuggets with the best addition of purslane leaves and to establish the protein and fat content characteristics in the optimal purslane-enriched chicken nuggets. The research method employed a Factorial Completely Randomized Design (CRD) comprising 2 factors and 3 treatments: chicken meat addition concentrations of 40%, 35%, 30%, and purslane leaf addition concentrations of 10%, 15%, 20%. The highest treatment from the protein content analysis was D3K3 with an average value of 88.66%, while the lowest value was obtained from treatment D1K1 with an average value of 80.99%. The highest fat content analysis was found in treatment D1K1 with an average value of 0.274%, while the lowest was obtained from treatment D3K3 with an average value of 0.161%. Organoleptic tests, based on the highest average values for aftertaste, taste, color, aroma, and texture, were as follows: D3P2 (3.5), D3K3 (3.2), D3P2 (3.3), D3K3 (3), D2K2 (3.3). The lowest average values for aftertaste, taste, color, aroma, and texture were found in D3K2 (2.5), D2K2 (1.9), D3K3 (2.1), D1K1 (1.6), and D1K1 (1.6), respectively. This research provides new insights into the potential use of purslane leaves as an additive in chicken nugget products to enhance functional value and consumer appeal.

Key words: krokot, leaf, nugget, chicken, functional food



ABSTRACTS OF ROOM 5

FOOD SCIENCE AND TECHNOLOGY

Abstracts_ID: FST 019

Shelf Life Prediction for Minimal Processing of Melon (*Cucumis melo* L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model

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ABSTRACT: Melon (*Cucumis melo* L.) minimal processing has become an increasingly sought-after product in the fruit-based food industry. Minimally processed products offer advantages in preserving the sensory and nutritional qualities of the fruit while minimizing the use of preservatives and heat treatments that can affect the fruit's characteristics. The objective of this research is to determine the changes in the quality of minimally processed melon using the Accelerated Shelf Life Test (ASLT) method with the Arrhenius model and to determine the shelf life of minimally processed melon using the ASLT method with the Arrhenius model. The research employed the ASLT method with a Completely Randomized Design (CRD) consisting of 2 factors. Factor 1 involved three types of packaging (A), and factor 2 encompassed two room storage temperatures (S). The treatments in this experimental design included storage temperatures (S) of 30°C and 10°C. The results of the research indicated that the highest weight loss occurred in the sample (treatment at 10°C with wrapping packaging), while the lowest weight loss was observed in the treatment at 10°C with PP packaging. At a temperature of 30°C, melons stored in wrapping packaging for one day exhibited the highest weight loss at 96%, whereas melons stored in PP packaging for 9 days had the lowest weight loss at 54.3%. The highest soluble solids content at a storage temperature of 10°C was found in wrapping packaging, reaching 11.25% Brix, while the lowest total soluble solids content was in HDPE packaging, at 7% Brix, with a storage duration of 9 days. Observations on melons showed that the highest soluble solids content at a storage temperature of 30°C was in wrapping packaging, at 8.4%, after one day of storage, while the lowest value was in PP packaging, at 0.3%, after 9 days of storage. This research serves as a foundation for the development of more efficient storage management strategies, ensuring optimal quality of minimally processed melons during distribution and consumption.

Key words: shelf life, minimal processing, melon, ASLT, arrhenius

Abstracts_ID: FST 020

Characteristics and Antioxidant Activity of Candied Nutmeg (*Myristica fragrans*) with Addition of Citric Acid

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ABSTRACT: Candied nutmeg (*Myristica fragrans*) is a processed fruit product with the potential to serve as a natural alternative for refreshment and sweetening. Nutmeg not only imparts distinctive aroma and flavor but is also recognized for containing bioactive compounds that have the potential to confer health benefits, including antioxidant properties. The objective of this research is to determine the characteristics of candied nutmeg, assess antioxidant activity, and ascertain the optimal concentration of citric acid. The research methodology employs a Factorial Completely Randomized Design (CRD) consisting of two factors: the blanching factor (B) with two levels (non-blanching and blanching) and the citric acid concentration factor (S) with three levels (1.5%, 2%, and 2.5%). Blanching is performed at temperatures ranging from 75-95 °C for a duration of 4 minutes. The results indicate that the citric acid concentrations consist of three levels: 1.5%, 2%, and 2.5%. The highest pH value is observed in treatment B1S1 (non-blanching and 1.5% citric acid addition) at 2.84, while the highest vitamin C content is recorded in treatment B1S2 (non-blanching and 2% citric acid addition) at 56.9%. The optimal antioxidant activity is found in treatment B1S3 (non-blanching and 2.5% citric acid addition) at 82.46%. The best citric acid concentration is obtained from treatment B2S1 (blanching and 1.5% citric acid addition). In conclusion, the treatments of non-blanching, blanching, and citric acid concentration do not significantly affect the color and texture parameters of candied nutmeg, but they exhibit a highly significant impact on the taste and aftertaste parameters. This research is expected to contribute to the development of innovative products in the candied nutmeg category, meeting the increasing consumer demand for functional and healthy products.

Key words: antioxidants, candied, nutmeg fruit, citric acid

Abstracts_ID: FST 021

Shelf Life Prediction for Beluntas Leaf Tea (*Pluchea indica* L.) and Rosella (*Hibiscus sabdariffa*) using Accelerated Shelf Life Test (ASLT) Method with Arrhenius Model

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ABSTRACT: Prediction of shelf life is a critical step in ensuring the quality and safety of food products. Beluntas leaf tea (*Pluchea indica* L.) and rosella tea (*Hibiscus sabdariffa*) have become integral components of the diverse array of herbal beverages increasingly favored by consumers, owing to their distinctive flavors and potential health benefits. Consequently, comprehending the shelf life of these two tea variants is imperative to guarantee the sustained quality of the produced products throughout the desired storage duration. This research aims to assess the quality changes in beluntas and rosella leaf teas using the Accelerated Shelf Life Test (ASLT) method with the Arrhenius model and to estimate the shelf life of beluntas and rosella teas using the ASLT method with the Arrhenius model. The shelf life prediction method was executed using the Accelerated Shelf Life Test (ASLT) with the Arrhenius model. Beluntas and rosella leaves were packaged in aluminum foil, HDPE plastic, and PP plastic, stored at temperatures of 10°C, 30°C, and 45°C for 28 days, with observations conducted every 7 days. Observations revealed that storage temperature and packaging type significantly influenced the values of water content, pH, and antioxidants. The estimated shelf life of beluntas and rosella leaf teas for 28 days using aluminum foil packaging at temperatures of 10°C, 30°C, and 45°C was 212 days, 869 days, and 479 days, respectively. For HDPE packaging, the estimated shelf life was 161 days, 173 days, and 842 days, while for PP packaging, it was 629 days, 290 days, and 171 days. This research provides comprehensive insights into the potential shelf life of beluntas and rosella leaf teas using the ASLT approach with the Arrhenius model. This information can offer valuable guidance in the planning and management of tea production, ensuring the production of high-quality products acceptable to consumers throughout the desired storage period.

Key words: shelf life beluntas leaves, pluchea indica, rosella, ASLT, Arrhenius

Abstracts_ID: FST 022

Influence of Drying Temperature on Antioxidant Content of Beluntas Leaf Tea (*Pluchea indica* L.)

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ABSTRACT: Drying is a critical stage in herbal tea production, and the temperature applied during this process has the potential to influence the essential antioxidant compound content for the health benefits of tea. Beluntas leaf tea (*Pluchea indica* L.) has long been recognized as an herbal beverage with potential health benefits. One critical aspect influencing the quality of this tea is the drying process of beluntas leaves after harvesting. The drying temperature in this process is believed to affect the antioxidant content in beluntas leaf tea. This research aims to determine the best characteristics of beluntas leaves using an oven dryer, establish the optimal drying temperature and time for beluntas leaf tea with the highest antioxidant content, and determine the drying temperature and time to obtain the best formulation for beluntas leaf tea. The research method employed a Complete Randomized Factorial Design with two factors: drying time and drying temperature. The drying times used were 120, 140, and 160 minutes, while the drying temperatures were 50, 60, and 70°C. Beluntas leaf tea was brewed using 200 ml of hot water at a temperature of 90-100°C, steeped for 10 minutes. The results showed that both temperature and drying time significantly influenced water content, acidity level (pH), yield, antioxidant content, and tannin content. Higher temperatures and longer drying times led to decreased values of water content, pH, yield, antioxidant content, and tannin. The treatment of drying temperature and time for beluntas leaf tea to obtain the best antioxidant content, based on the analysis, was in the sample S1W2 (drying temperature of 50°C for 140 minutes) with water content of 7.74%, pH of 5.92, yield of 74.66%, antioxidant content of 59.12%, and tannin content of 14.90%. 3) Organoleptic testing preferred by the panelists was observed in the sample S3W2 (drying temperature of 70°C for 140 minutes) with a greenish-yellow color, a slightly beluntas aroma, a non-bitter taste, and a mild aftertaste. The findings from this research are expected to provide practical guidance for improving the quality of beluntas leaf tea while maintaining or even enhancing its antioxidant content.

Key words: antioxidant, beluntas leaves, drying, tea, temperature

Abstracts_ID: FST 023

Shelf Life Prediction of Minimal Processing for Crystal Guava (*Psidium guajava* L.) using ASLT (Accelerated Shelf Life Test) Method with Arrhenius Model

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ABSTRACT: Shelf life prediction plays a crucial role in ensuring the quality and safety of food products. The increasing popularity of minimally processed crystal guava (*Psidium guajava* L.) in the food industry highlights the need to understand and optimize its shelf life. Minimally processed products offer advantages by preserving the sensory qualities and nutritional value of fruits while minimizing the use of preservatives and heat treatments that may compromise the inherent characteristics of the fruit. This research aims to assess the quality changes in minimally processed crystal guava using the Accelerated Shelf Life Test (ASLT) with the Arrhenius model and to estimate its shelf life under different storage conditions. The RESEARCH utilized a Completely Randomized Design with two factors: packaging types (PP, HDPE, Wrapping) and storage temperatures (10°C and 30°C). The parameter under investigation was water content. The findings revealed that at 10°C, HDPE packaging exhibited the highest water content on the 9th day compared to Wrapping packaging, registering 23.67. At 30°C, the highest water content was observed with HDPE packaging, reaching 33.27%, while Wrapping packaging recorded the lowest at 18.6%. These results provide valuable insights into the influence of packaging and storage conditions on the water content of minimally processed crystal guava. The practical implications of this research extend to the food industry, offering guidance for optimizing distribution and inventory management based on the predicted shelf life. Understanding these factors enhances the efficiency of production planning and ensures that the product maintains its quality throughout the desired storage period, meeting consumer expectations for fresh and high-quality produce.

Key words: shelf life, crystal guava, minimal processing, ASLT, arrhenius

Abstracts_ID: FST 024

Characteristics of Non-Carbonized Corn Cob and Teak Leaf Biopellets with Adhesive Composition and Drying Temperature Treatments

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ABSTRACT: Biopellets offer an alternative solution to address organic waste issues and environmental pollution. Corn cobs and teak leaves are biomass sources suitable for biopellet production. The objective of this research is to examine the influence of adhesive composition and drying temperature on the characteristics of corn cob and teak leaf biopellets without carbonization, as well as to determine the optimal adhesive composition and drying temperature in the biopellet production process. The research employed a Completely Randomized Design (CRD) with a factorial pattern. The adhesive composition factor had three levels: 10%, 15%, and 20%. The drying temperature factor had three levels: 90°C, 100°C, and 110°C. Quality testing of biopellets included ash content, moisture content, density, volatile matter content, combustion rate, and shatter index. The research findings revealed that the ash content of biopellets ranged from 3.73% to 5.65%, moisture content ranged from 7.02% to 27.65% (w.b.), density ranged from 0.39 g/cm³ to 0.61 g/cm³, volatile matter content ranged from 93.65% to 98.54%, combustion rate ranged from 0.06 g/min to 0.09 g/min, and the shatter index ranged from 36.78 to 57.87. The biopellets in this research did not yet meet the SNI 8021:2014 standard; however, certain treatments met the standard for moisture content, specifically treatments K1T2, K1T3, K2T3, and K3T3. Adhesive composition significantly influenced moisture content, density, volatile matter content, and shatter index. Drying temperature significantly affected ash content, moisture content, density, volatile matter content, and combustion rate. The optimal results were obtained for moisture content, volatile matter content, and combustion rate at 10% adhesive composition and 110°C temperature, ash content at 10% adhesive composition and 90°C temperature, density at 20% adhesive composition and 90°C temperature, and shatter index at 20% adhesive composition and 110°C temperature. This research provides valuable insights for the development of biopellets as a renewable energy source from agricultural and forestry waste.

Key words: biopellet, corn cob, teak leaf, adhesive, drying

Abstracts_ID: FST 025

Performance and Drying Characteristics Analysis of Crystalline Coconut Sugar using a Rotating Rack Type Dryer

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ABSTRACT: Coconut sugar crystal is a processed product with high economic value, particularly in the food and beverage industry. The drying of coconut sugar crystal is a critical step in the production process, significantly influencing overall production quality and efficiency. This research aims to analyze the performance or capability of a rotating shelf dryer in drying coconut sugar crystals and to examine the drying characteristics of coconut sugar crystals using a rotating shelf dryer. The research method begins with a preliminary research to determine the drying time required to achieve a maximum moisture content of 3%, in accordance with the quality standards for coconut sugar crystals. The experimental method is employed with two treatments, each repeated three times, using the same capacity for each repetition. The two treatments involve the use of a 202-sized semawar stove with a small flame opening (P1) and a 202-sized semawar stove with a large flame opening (P2). Variables observed and measured in the research include: moisture content testing, drying room temperature and distribution, air humidity, drying time, drying rate analysis, energy usage efficiency, and drying efficiency. The results indicate that the rotating shelf dryer for drying coconut sugar crystals exhibits the highest drying efficiency for P1 at 4.46% in P1U2 and for P2, the highest efficiency is 3.18% in P2U2. Drying coconut sugar crystals using a rotating shelf dryer for P1 takes 75 minutes from the initial moisture content of 6.37% db to the least final moisture content occurring in P1U2 at 3.01% db, with an average drying room temperature of 53.7°C and an average material temperature of 46.8°C. For P2, with a drying time of 60 minutes from the initial moisture content of 6.12% db to the least final moisture content occurring in P2U2 at 2.23% db, with an average drying room temperature of 58.4°C and an average material temperature of 51.2°C. This research can serve as a reference for researchers and practitioners in the field of food processing technology to develop more efficient and sustainable drying methods.

Key words: analysis, performance, characteristics, drying, crystalline coconut sugar

Abstracts_ID: FST 026

Characteristics of Carbonized Corn Cob and Rice Husk Biopellets with Tapioca Starch and Clay Adhesive

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ABSTRACT: Corn cobs and rice husks are abundant agricultural residues that can be utilized as potential raw materials for biochar pellets. The challenge in producing biochar pellets from these materials lies in their low mechanical strength and stability. This research aimed to investigate the influence of raw material composition and binders on the characteristics of biochar pellets, including density, ash content, moisture content, volatile matter, combustion rate, and shatter index. The research utilized a factorial pattern of Completely Randomized Design. The raw material composition factors included 60% corn cobs: 40% rice husks, 75% corn cobs: 25% rice husks, and 90% corn cobs: 10% rice husks. The binder composition factors consisted of 25% clay: 75% tapioca, 50% clay: 50% tapioca, and 75% clay: 25% tapioca. The ratio between the raw material mixture and the binder was 85:15. Variables tested in this research included density, ash content, moisture content, volatile matter, combustion rate, and shatter index. Data were analyzed using analysis of variance (ANOVA). The results showed that the composition of raw materials and binders significantly influenced density, combustion rate, moisture content, ash content, and volatile matter. However, there was no significant effect on the shatter index. The optimal treatment for moisture and ash content was found at a raw material composition of 90% corn cobs: 10% rice husks and a binder composition of 25% clay: 75% tapioca. The characteristics of density, volatile matter, combustion rate, and shatter index were most optimal at a raw material composition of 60% corn cobs: 40% rice husks and a binder composition of 75% clay: 25% tapioca. This research provides insights into the use of tapioca flour and clay binders to enhance the characteristics of biochar pellets from the carbonization of corn cobs and rice husks. The implications of this research can serve as a basis for the development of biochar pellets using local biomass with optimal mechanical and thermal properties.

Key words: biopellets, corn cobs, rice husks, tapioca flour, clay

Abstracts_ID: FST 027

Characteristics of Carbonized Biopellets from a Mixture of Corn Cobs, Corn Stalks, and Teak Leaves with Clay Soil Binder

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ABSTRACT: Biopellets stand as an environmentally friendly solution to meet alternative energy needs. This study aims to analyze the characteristics of bio-pellets produced through the carbonization of a mixture of corn cobs, corn stalks, and teak leaves with a clay soil binder. The carbonization process involved varying the composition of raw materials to evaluate their influence on the physical and chemical properties of the bio-pellets. The research seeks to identify the characteristics of bio-pellets derived from waste materials, such as corn cobs, corn stalks, and teak leaves, with the addition of clay soil binder as an alternative fuel source. A Completely Randomized Design (CRD) was employed with nine treatment variations and 27 experimental units. Treatment variables included the composition of raw materials and the percentage of clay soil binder. Observed parameters encompassed density, moisture content, ash content, volatile matter content, combustion rate, and carbonized bio-pellet durability. The study results indicate that the characteristics of carbonized bio-pellets, including density, moisture content, ash content, volatile matter content, combustion rate, and durability, can be influenced by the composition of raw materials and the percentage of clay soil binder. The composition of raw materials significantly affected some parameters, while the percentage of clay soil binder had a notable impact on most treatments. This research provides valuable insights into the application of clay soil binder to enhance the characteristics of bio-pellets derived from a mixture of corn cobs, corn stalks, and teak leaves. Although most parameters meet the standards outlined in SNI 8021-2014, some aspects, such as density and ash content, still require further attention to ensure bio-pellets reach the desired standards.

Key words: biopellets, corn cobs, corn stalks, teak leaves, clay



ABSTRACTS OF ROOM 6 AGRICULTURE ENGINEERING

Abstracts_ID: AEG 001

Energy Requirement Projection for Agricultural Machinery in Paddy Cultivation using LEAP Software in Baturraden District, Banyumas Regency Central Java Province

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ABSTRACT: The surge in population and agricultural advancements poses unprecedented challenges in fulfilling the energy demands for Agricultural Machinery. This research focuses on the Baturraden District, renowned as a pivotal paddy farming center in the Banyumas Regency. The primary objective is to project the energy needs for agricultural machinery in paddy cultivation, utilizing the Long-range Energy Alternatives Planning System (LEAP) software to forecast requirements under sustainable agricultural scenarios. The research aims to predict agricultural machinery energy requirements in Baturraden District's paddy cultivation for the next decade. Employing LEAP software, the research estimates energy demand, comparing scenarios of Business as Usual (BAU) and Government's energy conservation (GOV) in agricultural machinery energy needs. Combining field surveys with LEAP simulation modeling, the research identifies agricultural machinery operational data, encompassing types, capacities, and frequency of usage in Baturraden. The LEAP model then projects agricultural machinery energy needs, considering factors like land area, productivity, and crop types. The findings disclose a significant uptick in agricultural machinery energy demands for paddy cultivation in Baturraden. LEAP projections reveal an annual 2.1% reduction in fuel consumption for two-wheel tractors from 2023 to 2032. Projected fuel consumption stands at 51,823.8 liters/hectare/year, correlating with a 2.1% annual drop in agricultural land conversion rates in Baturraden. BAU scenario indicates higher fuel consumption, with the GOV scenario projecting 51,305.5 liters/hectare/year in 2032, 1% lower than BAU. This research offers key insights into agricultural machinery energy needs in Baturraden's paddy cultivation, providing a foundational framework for sustainable energy planning in agriculture. Dynamic factors influencing agricultural sector growth are integral considerations in this comprehensive analysis.

Key words: projection, energy, agricultural machinery, paddy cultivation, LEAP software

Abstracts_ID: AEG 002

Design Analysis of Wind Power Plant for Vannamei Shrimp Farming in the Coastal Area of Cilacap using the Homer Application

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ABSTRACT: Vannamei shrimp farming is a strategic industry in the coastal area of Cilacap that requires a sustainable energy supply. Wind Power Plants (PLTB) emerge as an interesting alternative to meet these energy needs. This research aims to conduct an optimal PLTB design analysis using the Homer Application in Vannamei shrimp farms. The objectives are: (1) to determine the appropriate type of wind turbine for pond aquaculture in the coastal area of Cilacap, (2) to assess the amount of electrical energy generated by PLTB in pond aquaculture in the coastal area of Cilacap, and (3) to evaluate the capabilities of PLTB in the aquaculture sector in terms of economic feasibility and efficiency. The research methodology involves field surveys to collect data related to the energy needs of Vannamei shrimp farms and the environmental characteristics of the coastal area of Cilacap. This data is then used as input in the Homer Application to design a PLTB system that aligns with the energy needs and local environmental conditions. The analysis results indicate that PLTB can be an efficient and sustainable solution to meet the energy needs of Vannamei shrimp farms in the coastal area of Cilacap. The Homer Application aids in determining the optimal configuration of PLTB, including the selection of location, type of wind turbine, capacity, and power distribution devices. The study reveals that the Karangtawang area in the Nusawungu Subdistrict, Cilacap Regency, has sufficient wind potential to generate electrical energy with an average wind speed of approximately 4.026 m/s. The selected wind turbine for Vannamei shrimp farms is the AWS HC 1.8kW, and the simulation results in the Homer system indicate that using two turbines can generate 5.178 kW/year of electrical energy. The simulation also produces an excess electricity of 11.3%. A lower excess electricity value indicates better system performance because almost all generated energy is utilized and not wasted.

Key words: wind power plant, vannamei shrimp farming, homer application, renewable energy, cilacap coast.

Abstracts_ID: AEG 003

Modification of Combustion System in Rotating Shelf Corn Dryer Energized by Coconut Shell Briquettes

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ABSTRACT: Corn seed drying, specifically using a rotating rack, has been a focal point of research aimed at improving energy efficiency and sustainability. This research focuses on modifying the combustion system of a rotating rack corn seed dryer powered by coconut shell briquettes. The objectives include conducting a performance test on the corn seed drying equipment and analyzing the combustion system. The research method involves analyzing the combustion system, encompassing the design and implementation of changes to the drying unit. Coconut shell briquettes were chosen as an alternative fuel due to their abundant availability and potential as a renewable energy source. The performance of the combustion system underwent evaluation through structural and functional tests, including equipment performance testing. Functional tests ensured the proper functioning of the corn seed drying machine, while equipment performance tests aimed to guarantee optimal functionality and quality drying results. The drying tube's examination confirmed its effectiveness in fulfilling the function of drying corn seeds. These tests allowed the determination of the quality of the corn seed drying machine in line with its intended function. Results from the modification using biomass briquette fuel demonstrated the ability to reduce moisture content in accordance with Standard SNI 013920-1995, achieving a moisture content of 14%. The experiments showed varying moisture content percentages, such as 13.3% after 5 hours, 12.7% after 7 hours, and 13.2% after 5 hours. Rotation speed testing for the drying machine's performance consistently yielded similar results across multiple phases. This research implies significant contributions to enhancing the sustainability of corn seed drying through the use of environmentally friendly alternative fuels. The modification serves as a foundation for developing more efficient and sustainable corn seed drying technologies, particularly in the agricultural and food industry.

Key words: modification, combustion system, rotating dryer, briquette, coconut shell

Abstracts_ID: AEG 004

Development of an Self-Sustaining Energy System in Rice Milling Processes using a Closed-Loop Model at the Teaching Industry of Jenderal Soedirman University

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ABSTRACT: The development of an independent energy system for the rice milling process with a closed-loop model at the Teaching Industry of Universitas Jenderal Soedirman represents an innovative step towards efficiency and sustainability in the university environment. This research aims to determine the energy requirements and mass balance in rice milling and develop a rice milling production system using a closed-loop model. The research method involves designing an integrated system model, implementing green technology, and analyzing system performance. Solar and microhydro energy were chosen as the main resources, with the use of batteries for energy storage. The system is designed to operate independently and provide sufficient power for rice milling at the Teaching Industry of Universitas Jenderal Soedirman. The method used in this research is the level I, II, and III balance model, then analyzed using the efficiency equation for each rice milling production process. The research results show that the level I balance model produces a yield of 70%, the level II balance model obtains a yield of 62.64%, and the level III balance model obtains a yield of 62.48%. The energy requirement for rice milling is 66,305 Wh for one milling process with a capacity of 5,100 kg of harvested rice. The rice milling process produces rice husks as a byproduct amounting to 885.18 kg, making it a potential alternative energy source with a biomass conversion yield of 46.43 kWh/day. The use of a closed-loop model at the Teaching Industry of Universitas Jenderal Soedirman provides inspiration for the development of similar systems in other educational institutions. This research illustrates a concrete effort towards energy sustainability in the academic environment and can serve as a foundation for the development of environmentally friendly technology in the rice milling industry.

Key words: self-sustaining energy, rice milling, using a closed-loop model at the Teaching Industry of Universitas Jenderal Soedirman

Abstracts_ID: AEG 005

Energy Audit on Premium Rice Production at Rice Milling Unit (RMU) Teaching Industry of Jenderal Soedirman University

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ABSTRACT: The Rice Milling Unit (RMU) at Teaching Industry, Jenderal Soedirman University, stands as a modern facility significantly contributing to premium rice production. Despite technological advancements, achieving energy efficiency remains a challenge. This research focuses on analyzing energy consumption, identifying potential savings, and improving energy management within RMU. The methodology involves data collection on energy consumption, analyzing production equipment performance, and evaluating energy efficiency. Examining variables like biomass fuel energy, electrical energy, human energy, and overall efficiency during three data collection points in the rice production process reveals substantial consumption of electrical and thermal energy. Proposed recommendations aim to optimize energy use, ensuring premium rice quality while reducing overall energy consumption. Total energy consumption to produce 1 kg of premium rice at RMU is 4,305 MJ/kg, with reported efficiency rates of 87% for biomass fuel, 62.31% for human energy, and 82.17% for electrical energy. Primary energy usage is in biomass fuel energy, particularly during drying. Energy-saving initiatives involve practical measures such as timely equipment maintenance, replacement of the rubber roll on the husker machine, and modification of the separator machine outlet. The audit results form a basis for sustainable energy management strategies at RMU, emphasizing efficient technologies and best practices. This research holds significant potential to enhance sustainability and energy efficiency in premium rice production at RMU, Jenderal Soedirman University.

Key words: audit, energy, premium rice, teaching industry, jenderal soedirman university

Abstracts_ID: AEG 006

Analysis of Solar Power Plant Design for Irrigation in Kaliurip Village, Banyumas Regency using Homer Software

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ABSTRACT: Affordable and sustainable energy is pivotal for agricultural development, particularly in rural areas. This research examines the design analysis of solar power plants (SPPs) for irrigation in Kaliurip Village, Banyumas Regency. With renewable energy solutions, the research aims to enhance energy resilience and contribute to sustainable development at the local level. Leveraging HOMER software for simulation and techno-economic analysis, the research involves field surveys to gather data on solar radiation, energy requirements for irrigation, and technical parameters. Using this data, an optimal SPP system is designed to meet the village's irrigation energy needs. The analysis reveals that implementing SPPs can efficiently and sustainably fulfill the energy requirements of irrigation in Kaliurip Village. The proposed system not only reduces dependence on conventional energy but also shows potential for long-term operational cost reduction. HOMER software results indicate abundant solar energy potential, with an average irradiance of 4,660 kWh/m²/day. The total Net Present Cost (NPC) for the SPP project in the field is Rp.1,052,034,000.00, with an operating cost of Rp.29,787,620.00 and a levelized Cost of Electricity (COE) of Rp.2,138.00. In comparison, total NPC using calculations is Rp.964,150,500.00, with an operating cost of Rp.27,232,800.00 and a levelized COE of Rp.2,073.00. HOMER simulations demonstrate the SPP system generating 57,266 kWh/year with an excess electricity of 18,208 and an unmet electric load of 5,245 (12.5% unmet). Calculated simulations produce 46,808 kWh/year with an excess electricity of 8,770 and an unmet electric load of 6,683 kWh/year (16.5% unmet). These findings offer practical insights for developers, project managers, and stakeholders in implementing SPPs for rural irrigation.

Key words: design, power generation, solar power, irrigation, homer

Abstracts_ID: AEG 007

Design and Development of Solar Energy for DFT (Deep Flow Technique) Minihydroponic System with Microcontroller based Automatic Nutrient Control for Red Lettuce

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ABSTRACT: Population growth and limited agricultural land necessitate efficient and sustainable farming methods. This research aims to design and construction of a mini-hydroponic system utilizing the Deep Flow Technique (DFT), optimized with solar energy, and featuring automatic nutrient control based on a microcontroller, specifically tailored for red lettuce (*Lactuca Sativa* var. Crispa). The research aims to design a mini-hydroponic system with a Solar Power Plant (PLTS) as the primary power source for the hydroponic pump and control components, focusing on electrical performance, system control, pump power requirements, and financial analysis. Results indicate that the system provides an optimal environment for the growth of red lettuce with automatically regulated nutrient levels. The design involves hardware and software development, along with system testing. System performance, including energy efficiency, water savings, and harvest yields, was evaluated. The electrical system generated a peak power of 39.73 W on the 4th day, with an average daily total of 305.19 W over a 7-day period. Solar panel efficiency ranged from 10.01% to 15.77%. Nutrient control testing showed an accuracy of 95.03% in nutrient concentration readings after calibration with a TDS meter. The overall control system functioned well, maintaining nutrient concentrations within desired limits. Financial feasibility analysis using NPV, IRR, B/C ratio, and PP demonstrated positive outcomes. NPV amounted to Rp220,713.08, IRR was 12%, B/C ratio reached 1.12, and PP stood at 2.66 years. These results signify the investment's viability with a favorable rate of return. The solar-powered DFT mini-hydroponic system with automatic nutrient control holds promise as an alternative for sustainable agriculture, particularly for red lettuce cultivation. Its potential application in areas with limited land and resources adds value to the development of efficient and sustainable farming practices.

Key words: minihydroponics, deep flow technique, solar energy, automatic, microcontroller

Abstracts_ID: AEG 008

Design and Development of Minihydroponics Deep Flow Technique (DFT) System with Solar Energy with Manual Control on Lettuce (*Lactuca Sativa L.*)

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ABSTRACT: Limited agricultural land availability and population growth necessitate innovation in farming systems. This article discusses the design and construction of a mini-hydroponic system using the Deep Flow Technique (DFT) powered by solar energy, with manual control, focusing on lettuce cultivation (*Lactuca Sativa L.*). The research aims to designing a solar-powered DFT mini-hydroponic system with a solar pump for lettuce, evaluating its performance, power consumption, light intensity impact, and conducting financial feasibility analysis. The research method includes hardware and software design, system implementation, and performance testing. The research procedure involves a preliminary research of solar power systems, the design of the DFT mini-hydroponic system, the design of the solar power plant (PLTS), and its implementation by testing functionality, structure, and performance. Variables measured include voltage, current, power, power consumption, light intensity, and solar panel efficiency. Testing in this research includes structural analysis, performance testing, and financial feasibility analysis. Performance testing of the solar-powered pump produces voltage ranging from 12.57–15.13 V, electric current ranging from 0.29–3.03 A, power ranging from 3.73–45.00 W, and power consumption of 104 Wh daily during testing from 08:00 to 14:00 WIB. The sunlight intensity received by the solar panel ranges from 8108–83720 lux. The solar panel in the solar-powered DFT mini-hydroponic system achieves an efficiency ranging from 9.74–13.86%, with an average of 11.2%. The financial feasibility analysis results in a Net Present Value (NPV) of Rp461,593.73 at an interest rate of 5.75%, an Internal Rate of Return (IRR) of 22.8%, a Benefit-Cost Ratio (B/C ratio) of 1.33, and a Discounted Payback Period (DPP) of 2 years, 2 months, and 16 days. The designed solar-powered DFT mini-hydroponic system with manual control for lettuce offers an innovative and sustainable solution for urban agriculture, with potential application in various environments with limited land resources.

Key words: design, mini hydroponics, deep flow technique, solar energy, lettuce

Abstracts_ID: AEG 009

Projection of Banyumas Regency's Electrical Energy Requirements and Electrical Energy Provision at the Ketenger Hydroelectric Power Plant using LEAP Software

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ABSTRACT: The projection of electricity demand plays a crucial role in anticipating population growth and economic development. Kabupaten Banyumas, as an administratively evolving entity, requires accurate energy projections to meet its electricity needs. This research aims to project the electricity demand in Kabupaten Banyumas and evaluate the electricity supply from the Ketenger Hydroelectric Power Plant (PLTA) using the Low Emission Analysis Platform (LEAP) software. The research method involves analyzing historical data on electricity consumption, population growth, and economic growth in Kabupaten Banyumas. Subsequently, the LEAP model is utilized to simulate projections of electricity demand in the future, considering various development scenarios. The electricity planning calculations are based on the growth pattern of electricity usage similar to the base year, taking into account customer factors, economic growth, and energy elasticity in Kabupaten Banyumas. Electricity planning is conducted by simulating the LEAP software using the Business as Usual (BAU) scenario and manual calculations using the List of Electricity Needs (DKL) 3.2 scenario. The research results indicate that in 2032, the demand for energy with the DKL 3.2 method is 2,055,300,522 kWh, and the demand for energy with the BAU method is 1,752,317,090 kWh, out of a total available of 130,760,653 kWh. This signifies that over a period of 10 years, Kabupaten Banyumas experienced an increase in electricity demand by 97.1% for the DKL 3.2 method and 68.03% for the BAU method, while the production of the Ketenger Hydroelectric Power Plant also increased by 141%. From these results, the Ketenger Hydroelectric Power Plant can only meet 7.46% of electricity demand for the BAU scenario and 6.36% for the DKL 3.2 scenario. This research provides practical contributions to local-level energy planning, enabling informed and sustainable decision-making in the face of the growing demand for electricity in Kabupaten Banyumas.

Key words: banyumas regency, electrical energy, energy provision, hydroelectric power plant, LEAP software



ABSTRACTS OF ROOM 7

AGRICULTURE ENGINEERING

Abstracts_ID: AEG 010

Energy Audit in Corn Grits Production Process: a Case Study of Sida Maju Mill, Serayu Larangan Village, Purbalingga Regency, Central Java

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ABSTRACT: The production process of corn grits plays a crucial role in meeting the food needs of the community. However, the increasing energy demand in this process requires an in-depth study on energy use efficiency. Energy audit serves as a vital tool to identify potential savings and reduce environmental impact. The aim of this research is to conduct an energy audit on the corn grits production process. The energy audit will provide information on the total energy consumption used in the production process and identify inefficient stages. The method employed in this research is observation, where data collection is carried out through direct observation from the initial to the final stages of the corn grits production process. The energy requirements in the corn grits production process consist of human energy, gasoline fuel energy, diesel fuel energy, and solar energy. Data needs are obtained through primary and secondary data collection. Primary data is collected through three observations of the corn grits production process. Based on energy consumption calculations, the energy used in the corn grits production process is 415.56 MJ. This includes 10.28 MJ for harvesting, 13.77 MJ for transportation, 244.96 MJ for shelling, 149.01 MJ for drying, and 7.54 MJ for packaging. The total energy consumption per unit of product is calculated, with the highest energy value attributed to diesel fuel energy at 0.087 MJ/kg, human energy at 0.012 MJ/kg, gasoline fuel energy at 0.003 MJ/kg, and solar energy at 0.049 MJ/kg. The calculation of energy efficiency in the corn grits production process indicates that diesel fuel energy has efficiency approaching optimal levels, while human energy efficiency is significantly below the efficient range. This research paves the way for continuous improvement in the corn grits production practices at Sida Maju Mill.

Key words: audit, energy, corn, milling, sheller

Abstracts_ID: AEG 011

Design Analysis of Solar Power Generation for Agricultural Irrigation in Gumelem Wetan Village, Banjarnegara Regency using HOMER Software

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ABSTRACT: This research focuses on harnessing solar energy to enhance the efficiency and sustainability of agriculture in Gumelem Wetan Village, Banjarnegara Regency. The research aims to identify the potential of Solar Power Plants (PLTS) in the village. The objectives include gathering information on the potential of PLTS, understanding the electrical output of PLTS through the HOMER application as an electricity source in Gumelem Wetan Village, evaluating the efficiency of PLTS in powering water pumps for agricultural irrigation, and assessing the project investment costs for PLTS both in the field and through the HOMER application. The research methodology involves collecting PLTS specifications data and conducting direct measurements for both primary and secondary data using the HOMER software. The analysis reveals that Gumelem Wetan Village possesses a high solar energy potential, with an average intensity of 4.66 kWh/m²/day. HOMER simulations in the field result in an annual electrical output of 4,935 kWh, with an unmet electric load of 0.598% and excess electricity of 2,429. Similarly, PLTS system simulations yield 3,085 kWh/year, with an unmet electric load of 3.81% and excess electricity of 158. Furthermore, the research evaluates the efficiency of PLTS in powering water pumps for agricultural irrigation, considering primary data such as solar intensity over 17 days, load usage data, and voltage and current data from solar panels. The results demonstrate that PLTS can provide sufficient electricity for irrigation, despite some load discrepancies. Cost investment analysis indicates that the total project cost (NPC) in the field is Rp.105,801,100.00, with a Cost of Energy (COE) of Rp.2,247.64. Using calculations, the NPC becomes Rp.93,864,280.00 with a COE of Rp.2,060.58. This research serves as a foundation for decision-makers, planners, and researchers to plan the implementation of similar PLTS in different regions, considering varying environmental conditions. The results provide insights into the potential of PLTS as a source of electrical energy for agriculture, with positive impacts on sustainability and resource efficiency.

Key words: design, power generation, solar power, irrigation, homer

Abstracts_ID: AEG 012

Characteristics of Drying Corn Seeds (*Zea Mays* L.) using Rotating Rack Dryers with Biomass Energy

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ABSTRACT: Corn (*Zea mays* L.) seeds are a key agricultural commodity with a vital role in supporting global food security and the economy. In addition to being used as a raw material for food, corn seeds have diverse applications in livestock feed, bioenergy, and other processing industries. The drying of corn seeds is a crucial stage in the agricultural supply chain, as this process influences the quality, storage life, and economic value of the harvested yield. This research aims to determine the drying characteristics of corn seeds and assess the efficiency of a rotating rack-type dryer. The research method employed is a Completely Randomized Design. Measurement parameters include temperature, air humidity, moisture content, drying time, drying rate, and drying efficiency. Testing was conducted five times based on the quantity of fuel: 10 briquettes, 15 briquettes, 20 briquettes, 25 briquettes, and 30 briquettes. The results show that the time required to dry the corn to a moisture content of 12-14% in each test is nearly the same; each test, whether using 10, 20, 25, or 30 briquettes, required 5 hours, while the test with 15 briquettes took 7 hours due to the different initial moisture content in each test. The drying rate for each test is relatively consistent, ranging from 0.6-1% db/hour. However, the resulting drying efficiency is relatively low, ranging from 0.3-0.7%. These findings provide a significant contribution to understanding the corn seed drying process using a biomass-powered rotating rack-type dryer. The implications of this research can serve as a foundation for the development of more efficient and environmentally friendly corn seed drying technologies.

Key words: drying, corn grain, dryer, rotating rack, energy, biomass

Abstracts_ID: AEG 013

Energy Audit of Broiler Chicken Farms at the Teaching Farm of Jenderal Soedirman University

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ABSTRACT: Teaching Farm at Jenderal Soedirman University plays a crucial role as an agricultural education and research center. The broiler chicken farm within it serves as a model for a farming system that exemplifies sustainable practices. To achieve this, an energy audit becomes a vital instrument for evaluating and understanding energy usage in the broiler chicken farm. The objective of this research is to determine the energy requirements at each stage of broiler chicken farming, identify the types of energy consumption in the broiler chicken farming process, and identify the results of the energy audit to reduce energy consumption and save energy needs. The research method used is an experimental method involving mathematical calculations in the broiler chicken farming process. Data collection is performed three times in the broiler chicken farming process, starting from chick rearing, adult chicken maintenance, harvesting, to cleaning the coop. The obtained data are then analyzed descriptively to obtain a realistic overview of energy needs in broiler chicken farming, enabling the identification of potential energy-saving measures. The research results provide information on energy and energy efficiency in broiler chicken farming. The types of energy used include fuel energy (LPG), electricity, and human energy. The largest energy requirement is fuel energy (LPG), while the smallest is human energy. Energy consumption required at each stage of the farming process includes chick rearing at 30,262.47 MJ, adult chicken maintenance at 17,343.28 MJ, harvesting at 1,032.12 MJ, and coop cleaning at 179.91 MJ. This research contributes to understanding energy management practices in broiler chicken farming and provides a foundation for implementing steps to improve energy efficiency.

Key words: audit, energy, broiler chickens, teaching farm, jenderal soedirman universi

Abstracts_ID: AEG 014

Integrated Planning of Electrical Energy and Rice Farming Irrigation using LEAP Software at Ketenger Hydropower Plant in Central Java Province

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ABSTRACT: The increasing demand for energy and food security are two crucial aspects of sustainable development. This research analyzes integrated planning to meet the needs of electric energy and rice farming irrigation around the Ketenger Hydropower Plant (PLTA) in Banyumas Regency, Central Java Province. The research aims to understand the plans for the availability of electric energy at the PLTA and the availability of water in Ketenger village, which will be utilized for rice farming irrigation for the years 2022–2033. The research methodology involves the analysis of hydrological data, electricity demand, and rice irrigation water requirements. The Low Emissions Analysis Platform (LEAP) is employed to model various development scenarios, considering technical, economic, and environmental aspects. Simulations are conducted using LEAP software to forecast electricity demand in Banyumas Regency and the availability of water in Ketenger Village, as well as the availability of electric energy by the Ketenger Hydropower Plant using the Business As Usual scenario with trend and econometric approaches. The research findings indicate that the integration of electricity and irrigation systems can provide significant benefits in terms of resource utilization efficiency and sustainability. Projections for electricity consumption in Banyumas Regency show an increase, with a total average annual growth of 6.91% from 2022 to 2033. However, the Ketenger Hydropower Plant can only supply 5.2% of the energy in 2022 and 17.5% in 2033, necessitating additional electricity generation from other power plants to produce 1,572,860.76 MWh of electric energy in 2033. Projections for water needs in Ketenger Village for rice crop productivity show a requirement of 10,517.26 mm/year until 2033. This indicates that the average monthly rainfall in 2022 is optimal at 662.83 mm/month, as well as in 2033, with increased water availability at 876 mm/month. This assumes that the average amount of water needed for optimal rice production is 180-300 mm/month. This research contributes to the understanding of integrated planning for energy and agriculture, focusing on areas dependent on water resources from hydropower plants.

Key words: planning, electrical energy, irrigation, LEAP, hydropower

Abstracts_ID: AEG 015

Use of CD Paper as an Alternative Substrate in Tomato Seed Viability Testing

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ABSTRACT: Tomatoes are an essential vegetable commodity supporting food availability and nutritional adequacy. The use of quality seeds that have high viability is a determining factor in the success of tomato cultivation. Filter paper is a suitable substrate for germinating tomato seeds, but it is relatively expensive; therefore, looking for an alternative, more economical substrate is necessary. This research aims to determine alternative paper substrates for testing tomato seed germination. There were two treatments in this study, namely P1 (CD Paper Substrate) and P2 (Filter Paper Substrate), with eight replications, each consisting of 100 seeds, so 1,600 seeds were tested. The results of the research at the age of six days after sowing showed that normal seeds, abnormal seeds, dead seeds, and fresh seeds did not grow on filter paper substrates and CD paper substrates, respectively, as follows (81.25% and 80.75%; 4.625 % and 2.625%; 1.25% and 3.25%; 12.875% and 13.375%). The results of the research at the age of nine days after sowing showed that normal seeds, abnormal seeds, dead seeds, and fresh seeds did not grow on filter paper substrates and CD paper substrates, respectively, as follows (93.75% and 92.625%; 5% and 3.125%; 1.25% and 4.25%; 0% and 0%). The conclusion is that CD paper can be used as an alternative substrate for germinating tomato seeds.

Key Words: Seeds, CD paper, filter paper, tomatoes, viability.

Abstracts_ID: AEG 016

Remote Controlled Vehicle Solar cell powered Pesticides Sprayer

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ABSTRACT: The research objective was to develop a remote-controlled spraying vehicle powered by solar cells and to study the suitability of remote-controlled solar cell sprayers on farms. Using document data collection and technical data analysis. Solar cell-powered remote-controlled sprayer: the research objectives were 1) to design and develop a solar cell-powered remote-control sprayer vehicle. 2) To test the efficiency of a solar cell-powered remote control sprayer vehicle. Testing the performance of this solar cell-powered remote-controlled spray vehicle found that the drive efficiency of the sprayer truck was unloaded. Then, add water it will weigh to come up and test the distance of a solar cell-powered remote-controlled spray vehicle without water (drive on the grass) 50 meters, time 1.58 minutes. It tested the distance of a solar cell-powered remote-controlled spray car without water (go on grass) 50 meters, time 2.15 minutes. Test drive in a straight line without water at 50 meters using an amount equal to 4.55 litres takes a time similar to 2.27 minutes (drive on the ground). Test drive on a straight path without water at 50 meters, using a volume equal to 5.15 litres, using a time similar to 2.47 minutes (drive on grass).

Key words: Remote Controlled, Vehicle, Solar cell, Pesticides, Sprayer

Abstracts_ID: FST 028

Characteristics of Carbonized Biopellets from a Mixture of Corn Cobs and Teak Leaves with Treatment of Drying Temperature and Adhesive Content

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ABSTRACT: Biopellets present a promising alternative as an environmentally friendly energy source. This research aims to analyze the characteristics of bio-pellets produced through the carbonization of a mixture of corn cobs and teak leaves, taking into account the treatments of drying temperature and adhesive content. The carbonization process involved variations in the drying temperature of raw materials and the percentage of adhesive to evaluate their influence on the physical and chemical properties of the bio-pellets. The objective of this research is to determine the characteristics of carbonized biopellets made from a mixture of corn cobs and teak leaves with treatments of drying temperature and adhesive content. The raw materials used were carbonized corn cobs and teak leaves with tapioca flour adhesive. The research employed a Factorial Completely Randomized Design (FCRD) with two factors: adhesive content and drying temperature. Adhesive content consisted of three levels: 10%, 15%, and 20%, while drying temperature had three levels: 90°C, 100°C, and 110°C. The analyses included moisture content, volatile matter content, ash content, density, shatter index, and combustion rate. The characteristics of the bio-pellets produced in this study include moisture content ranging from 10.89% to 43.41% db, volatile matter content from 90.57% to 94.56%, ash content from 6.90% to 8.88%, density from 0.50 to 0.80 g/cm³, shatter index from 21.50% to 46.42%, and combustion rate from 0.05 to 0.07 g/minute. The most optimal combination of adhesive content and drying temperature for moisture content, volatile matter content, shatter index, and combustion rate was found to be 10% adhesive content and 110°C drying temperature. The most optimal ash content was observed at 10% adhesive content and 90°C drying temperature, while the most optimal density was at 15% adhesive content and 90°C drying temperature. This research contributes to understanding the characteristics of carbonized bio-pellets from a mixture of corn cobs and teak leaves, considering the factors of drying temperature and adhesive content. This information can be used to design an optimal formula for bio-pellets as an alternative energy source, efficiently utilizing agricultural and forestry waste.

Key words: biopellets, corn cobs, teak leaves, drying, adhesive

Abstracts_ID: FST 029

Bambara Groundnut (*Vigna subterranea*) - Texture Vegetable Protein Proportions can Provide Chunky in Meat Analogue Burger

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ABSTRACT: Meat contains significant amounts of protein and is highly nutritious. The demand for meat is growing with a growth rate of 7.35% during the forecast period 2020-2025. However, meat consumption patterns are unpredictable due to constant changes in consumer behavior towards meat with several factors such as price, appearance, convenience, quality, cultural aspects, safety, etc. Including, the major issues associated with the production of meat include excessive use of land and water resources, high risk of animal disease, negative impact on terrestrial and aquatic biodiversity, emission of greenhouse gases, and other environmental problems these have shifted consumer behavior from animal-based meat to plant-based meat. Interestingly, Bambara groundnut is a protein-rich bioresource with a high protein content of about 20.5-32.4%. The objective of this research was to study the proportions of Bambara groundnut flour (BGF) and texture vegetable protein (TVP) to improve the chunky profile meat analogue burgers (MABs). The MABs were produced with the ratio of BGF and TVP at 100, 90, 80, 70, 60, 50, 40, 30, 20, 10%, and TVP 100% (11 formulas) mixed with methylcellulose, garlic, black pepper, salt, coconut oil, canola oil, beetroot juice, and molasses. After weighing 18 grams and shaping them into balls to sheet, fry and rest for 30 minutes before evaluating water absorption and volume expansion at 60 and 95 °C. It found that at BGF 100 and 90% could not shape into a ball. The water absorption of BGF 50 and 10% showed the highest value at 60 and 95 °C for 18.80 and 43.74%, respectively. The value of volume expansion of BGF 40 and 60 % showed the highest at 60 and 95 °C for 67.62 and 67.63%, respectively. During the sensory test with 30 volunteers, MABs from BGF 70 to 10% were not different.

Key words: bambara groundnut, meat analogue, texture vegetable protein, plant-based food



ABSTRACTS OF ROOM 8

ANIMAL SCIENCE

Abstracts_ID : ASC 001

Evaluation Of Advantages and Disadvantages Of Different Culture Media Of Black Soldier Fly

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ABSTRACT: Maggot has the potential as a feed mixture. In an effort to produce good Maggot, the best media is needed for the growth and reproduction of these larvae. Maggots The black soldier fly, Black Soldier fly (*Hermetia illucens*) is almost spread throughout the world especially Indonesia, black soldier fly Maggots including Maggot flies are immune and can live in quite extreme environments, such as waste or rubbish. Maggot Black Soldier Fly (BSF) is the larva of the BSF fly insect (*Hermetia illucens*) which has potential as an alternative animal feed with economical price. Efforts to increase BSF maggot production are carried out by grow it on tofu dregs, coconut pulp, solids or palm mud. Objective This research is to determine the effect of using culture media on tofu dregs, coconut pulp, solids or palm mud for Black Soldier fly and evaluate the effect of different culture media on the nutritional content of crude fat, crude protein, crude fiber and dry Ingredients in tofu dregs, coconut pulp, solids or palm mud in Black Soldier fly, as well as an explanation of the advantages and disadvantages associated with each method. This research uses several culture media such as tofu dregs, coconut pulp, solids or palm mud. The results of this research show that the nutritional content of tofu dregs has a high crude protein of 23.63% and a low dry Ingredients of 8.69%. For the nutritional content of coconut pulp, it has high crude fiber of 31.6% and low crude protein of 5.6%. And finally the nutritional content of solid or palm mud has a high dry Ingredients of 81.65% and a low crude fat of 6%. Data shows that some culture media have high nutritional content of crude protein, crude fiber and dry Ingredients. Meanwhile, the nutritional content of crude fat is low.

Keywords: Culture Media, Performance/Production, Nutritional Content, Black Soldier Fly

Abstracts_ID : ASC 002

Growth performance of male laying hens fed diets containing BSF maggot meal (*Hermetia illucens*)

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ABSTRACT: The scarcity and high price of feed ingredients are common problems often faced by farmers in Indonesia, so alternative feed ingredients are needed that have sufficient nutritional content and are easily available at affordable prices. This study aims to evaluate the growth performance of male laying hens fed rations containing BSF maggot flour (*Hermetia illucens*). The design used was a completely randomized design (CRD) of 4 treatments with 5 replicates, and each replicate used 8 male Lohman Brown strain laying hens. The distinguishing factor between treatments is the level of maggot flour use, namely: P0 (Control treatment), P1 (Use of maggot flour 4%), P2 (Use of maggot flour 8%), and P3 (Use of maggot flour 12%). The observation variables were ration consumption, body weight, body weight gain and ration efficiency. The results showed that the use of maggot flour had a significant effect ($P < 0.05$) on the growth performance of male laying hens. Ration consumption, body weight and body weight gain of P0 and P1 were significantly higher than P2 and P3, while ration efficiency of P0, P1, and P2 were higher than P3. Based on the results of the study, it can be concluded that maggot meal can be used up to 4% level without reducing the growth performance of male laying hens. However, the use of maggot flour at 8% and 12% levels can reduce ration consumption, body weight and body weight gain, while ration efficiency decreases at the 12% level.

Key words: Ketarras Chicken, Growth Performance, Maggot

Abstracts_ID : ASC 003

The Effect of Using BSF Maggot Flour (*Hermetia illucens*) In Rations on Growth Performance of Ketarras Chickens (0-6 Weeks)

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ABSTRACT: Ketarras chicken is a chicken produced from efforts to improve genetic quality through a crossing process with a genetic composition of 25% brown laying breed chickens and 75% Arabian chickens. One of the factors that influence the performance of laying hens during the layer period is maintenance during the starter period. To support this productivity, quality feed is needed. Feed has an important role, because it consumes around 60-80% of total production costs. Providing alternative feed ingredients that can meet the nutritional needs of livestock needs to be sought to obtain maximum profits. One alternative feed ingredient that is quite high in protein is maggot. This study aims to evaluate the effect of using maggot flour in rations on the performance of Ketarras chickens aged 0-6 weeks. The design used was a Completely Randomized Design (CRD) with 4 treatments with 5 replications and each replication used 8 Ketarras chickens. The differentiating factor used was the level of maggot flour, namely P0 (Control treatment), P1 (Use of maggot flour in ration 4%), P2 (Use of maggot flour in ration 8%) and P3 (Use of maggot flour in ration 12%). The variables observed were ration consumption, body weight, body weight gain and ration conversion. The results showed that ration consumption, body weight, body weight gain and ration conversion had no significant effect ($P>0.05$). Based on the research results, it can be concluded that maggot flour can be used up to a level of 12% without reducing the growth performance of Ketarras chickens aged 0-6 weeks.

Key words: Ketarras Chicken, Growth Performance, Maggot.

Abstracts_ID : ASC 004

Effect of Humic Acid and Herbs Supplementation on Drinking Water Consumption in Bali Cattle with Palm Sludge Feed

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ABSTRACT: The primary requirement for achieving maximum productivity is feed, which accounts for 60–70% of production costs. Although palm sludge can provide animal feed at a reasonable cost, feed supplementation is necessary to increase their productivity. Herbs (*Curcuma longa* and *Melastoma malabathricum*) and humic acids were the supplements utilized in this study. Water is a vital nutrient that livestock need to survive and produce. Animals' ability to absorb and metabolize nutrients, particularly water requirements, was affected by feed supplements. This study aims to evaluate the effect of humic acid dan herbal supplementation on drinking water consumption in Bali cattle. This study used 20 male Bali cattle with an average weight of 172, 65 ± 16,94 kg, which was divided into 4 treatments and 5 cattle per treatment, the P0= control; P1= Herbs; P2= Herbs + humic acid 20 g and P3= Herbs + humic acid 40 g. Data were analyzed using ANOVA followed by Duncan's Multiple Range Test (DMRT). Correlation was used to evaluate the relationship between the temperature on drinking water. Results showed that treatments had a very significant effect ($P < 0.01$) on drinking water consumption, and P3 had a higher significance ($P < 0.05$) in drinking water compared with other treatments. The water consumption was correlated weakly with temperature ($P: < 0.05$; $R: 0.172$ and $R^2: 0.03$). In conclusion, the supplementation of humic acids 40 gr and herbs in Bali cattle with palm sludge feed had a higher drinking water consumption, although temperature had a significant effect on drinking consumption but the effect was only 17.2%.

Keywords: *Curcuma longa*, *Melastoma malabathricum*, Temperature, Humidity

Abstracts_ID : ASC 005

The Effect of Different Forage Balances on the Performance of Bali Cattle

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ABSTRACT: Indonesia's national meat stock in January 2023 is 56 thousand tons with meat needs of 67 thousand tons. Thus, there is a shortage of meat demand of 11 thousand tons per month. To overcome the shortage of national meat needs, one of them can be done by producing meat from local cattle, such as Bali cattle. Bali cattle are native to Indonesia that have high body weight gain, good body performance, good reproduction and adaptation to the good environment. In the livestock business we expect good performance from the livestock raised. To achieve good body performance, good feed content is needed. This study aims to determine the effect of different forage feed balances on the performance of Bali cattle. This research was carried out for 3 weeks, starting in early October 2023 at the Commercial Zone and Animal Laboratory (CZAL) of Bengkulu University. The cattle used in this study were 8 Balinese cows with the age of 2 years. This study used 2 treatments with 4 repetitions. The first treatment (P1) in this study was feeding with high crude fiber content and the second treatment (P2) was feeding with low crude fiber content. The feed given to P1 is field grass 55% + bran 8% + palm mud 15% + tofu pulp 20% + palm kernel meal 2% with a total crude fiber of 30.1766. The feed given to P2 is field grass 30%+ bran 15%+ palm mud 35%+ tofu pulp 16%+ palm kernel meal 4% with a total crude fiber of 29.2362. The variables observed from this study were weight gain, feed consumption and feed efficiency. The data were analyzed using the T test. The T test is a test performed to compare two treatments. The results of the analysis obtained are that P1 and P2 have an intangible effect ($P>0.05$) on the variable of body weight gain every week, while the average weight gain of P1 is 1.15 and P2 is 0.93. In P1 and P2 the effect is not real ($P>0.05$) on the variable feed consumption, the average feed consumption of P1 and P2 every week is 753765.5 kg and 756746.4 kg. P1 and P2 had an intangible effect ($P>0.05$) on feed efficiency variables with an average feed efficiency of 0.028 at P1 and 0.007 at P2. From this data it can be concluded that feeding with high crude fiber content has an intangible effect on weight gain, feed consumption and feed efficiency. However, feeding with high crude fiber content (P1) results in lower weight gain, feed consumption and feed efficiency than lower crude fiber feeding treatment (P2).

Key words: Crude fiber, Bali Cattle, weight gain, feed consumption, and feed efficiency.

Abstracts_ID : ASC 006

“Evaluation of Biosecurity Practices in Livestock Management: A Comprehensive Study on Isolation, Sanitation, Vaccination, and Traffic Control” (Case study in Beef Cattle Farms Giri Mulya Village, Giri Mulya District, North Bengkulu Regency)

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ABSTRACT: Indonesia is a country that pays great attention to livestock health after the FMD outbreak. The massive spread and high livestock mortality cases show the weak biosecurity of livestock in Indonesia. Bengkulu Regency is one of the areas affected by the FMD outbreak. This study aimed to evaluate biosecurity practices in 20 beef cattle farms in Giri Mulya village, North Bengkulu Regency. Evaluation involves interviews with respondents and direct observation. The survey questions cover the component aspects of biosecurity, including traffic control, sanitation, and isolation of new or sick livestock. Respondents' answers were adjusted according to the level of risk using a numerical system of 1 to 3 to assess the level of biosecurity risk. The higher the numerical value, the lower the biosecurity risk. Based on the questionnaire, most farmers were 50 years old (70% of respondents). The breeders ran the business for over six years (80% of respondents). The educational background of 90% of farmers is high school. Each farmer keeps from 3 to 5 cows. Some breeders carry out isolation practices to protect cows from disease. Isolation is applied to sick cows and new-born calves. The farmers did not apply isolation procedures for newly entered cows. 75% percent of farmers carried out daily sanitation of cages. All farmers vaccinated all cattle with the FMD vaccine. The breeders did not apply traffic control for humans and transports. To sum up, the sanitation procedure has been done very well; isolation needs minor improvements; however, traffic control has a hazardous risk of spreading disease.

Key words: Biosecurity, Isolation, Sanitation, traffic control, Beef Cattle

Abstracts_ID : ASC 007

EVALUATION OF CALVES REARING MANAGEMENT: A COMPREHENSIVE STUDY ON DIET, HEALTH, AND HOUSING

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ABSTRACT: This study aims to determine newborn calves to weaning rearing management in 20 cattle farms in the Giri Mulya Village area, Giri Mulya District, North Bengkulu Regency. The villages in Giri Mulya sub-district are one of the areas with a large beef cattle population in Bengkulu province. The Giri Mulya sub-district contributes significantly to developing beef cattle in Bengkulu province. This evaluation was conducted through interviews with beef cattle farmers through data collection and direct field surveys. The data was analyzed descriptively. The data collection was through questionnaires and direct observations were made in the research sites. The average age of cattle farmers is 50 years (70% of respondents). Farmers run their livestock business for over ten years (90% of respondents). The educational background of the farmer is 90% junior high school. Each farmer has an average of 3-4 cows. Farms in the Giri Mulya sub-district for the birth process calves, on average, carry out their births and are assisted by breeders to cleanse the body of livestock, such as cleaning mucus in newborn livestock and giving cholesterol to newborn calves. Farmers wean their cows at six months of age by separating calves from their mothers. The weaning method that is carried out, in general, is separated from the mother by tying up and giving forage feed and separating the cage from the mother; there is a weaning method of leaving it with the mother until the mother lustrous again. The feed given to the offspring is the same as the feed given to the mother to feed the forage younger. Based on direct surveys, calf rearing in beef cattle in Giri Mulya Village still uses traditional farming methods.

Key words: Beef cattle, calves, cattle breeding, Maintenance

Abstracts_ID : ASC 008

Evaluation of Feed Management on Beef Cattle Farms (case study in Giri Mulya village)

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ABSTRACT: Feeding beef cattle is a critical livestock management aspect affecting animal productivity and health. This research evaluated feed management in ten beef cattle farms in Giri Mulya Village. Giri Mulya Village is a village that includes a large number of breeders and residents who mostly farm and raise livestock. This research was a data collection of types of diet fed, feeding times, concentrate composition, feed technology implemented, and adequacy of nutrients supplied for beef cattle performances within a certain period. The farmers implement an intensive farming system. Permanent housing is equipped with water and electricity. The farmers' educational background was junior high school (60%). The remaining was graduated from senior high school. Beef cattle farming is a secondary occupation, and beef cattle is a livelihood asset and saving. This study showed that 30% of farmers applied good feeding practices; therefore, the body weight gains, feed efficiency, and cows' health were excellent. The majority of the farmers did not know the nutrient requirement of beef cattle. 70% of farmers did not supply enough water and feed for the cattle. The diet consisted of natural grass, King grass, and rice bran. The feed given depended on the availability of diet; thus, it did not meet the requirements. Body weight is the farmers' primary concern; however, the farmers did not set a range of time to achieve a certain body weight. It might take years to produce a certain body weight. To sum up, feed management in smallholder beef cattle farms did not feed the beef cattle based on the nutrient requirement, and good performances are achieved in a pretty long period of fattening program; thus, feeding management of beef cattle in Giri Mulya needs to be improved.

Key words: feeding management, beef cattle, performance

Abstracts_ID : ASC 009

Evaluation of Farming Practices for Young Goats in Smallholder Farming System: A Case Study in Giri Mulya Village, Giri Mulya District, North Bengkulu Regency

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ABSTRACT: This study evaluated the maintenance of newborn goat saplings to weaning in 20 goat farms. The location of the study was conducted in Giri Mulya village, Giri Mulya district, North Bengkulu regency. Farmer samples are taken purposely; this sampling is random, where the farmers have goat offspring. Evaluation involves interviews with respondents and direct observation in the field. The data obtained is then analyzed descriptively. This data collection method contains questions used as instruments in research and the results of direct observations in the field. Based on questionnaire data taken in the field, the average goat farmer is 50 years old (70% of respondents). Of the ten respondents, goat farmers run their livestock business for more than ten years (90% of respondents). The last educational background of the breeder was 80% primary school. Each breeder, on average, has 4-6 goats. In Giri Mulya village farms, goats' birth process, on average, carry out their births and are assisted by breeders to help clean the mucus in the livestock body, handling the umbilical cord. The average farmer does not apply for birth registration, giving colostrum to newborn goats, the average goat farmer in Giri Mulya village does not provide additional milk/substitutes, forage, and drinking water are given the same as their mothers. The average farmer weans the goat at the age of 6 months. The weaning method is done by yourself. When the mother has begun to lust, the mother has not given milk to the goats. In general, goat children are caged with their mothers until adulthood. Breeders do less health and treatment in goat farming on average. Based on a survey that has been carried out, the maintenance of goat children on goat farms in Giri Mulya village still uses traditional methods. Keywords: Goat, Goat Kid, Goat Farmer, Giri Mulya Villag

Abstracts_ID : ASC 016

Effects of Supplementing Pennyroyal (*Mentha Pulegium L.*) and Fenugreek on Japanese Quail Performance

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Abstract: Achieving optimal feed efficiency is paramount for sustainable quail production. This study delves into the potential effects of pennyroyal and fenugreek powder supplements on the growth performance, feed intake, and feed conversion ratio (FCR) of Japanese quail. A total of 150 quails were randomly assigned to a control group and two experimental groups, receiving rations with varying concentrations of pennyroyal and fenugreek powder. Over a 7-week period, we meticulously assessed weight gain, feed intake, and FCR. While weight gain remained consistent across groups, supplemented quails exhibited significantly reduced feed intake, particularly at higher concentrations, leading to a notable improvement in FCR. The study employed a carefully designed methodology to ensure robust and reliable results. A total of 150 quails were divided into three groups: a control group and two experimental groups. The experimental groups received rations with different concentrations of pennyroyal and fenugreek powder supplements. Each group had five replications, with 10 quails in each replication. The quails were raised in controlled environments with access to ad libitum feeding using automatic feeders and drinkers. The study duration was seven weeks, during which we regularly monitored weight gain, feed intake, and FCR. Data were subjected to statistical analysis using ANOVA, with significance set at $p < 0.05$. Chicken weight gain, a critical parameter in poultry production, did not exhibit significant differences between the control and treatment groups. This suggests that the incorporation of pennyroyal and fenugreek supplements did not exert a substantial impact on the overall weight gain of the quails. Parallel to the findings in chicken weight, quail weight gain remained unaffected by the supplements. The concentrations of pennyroyal and fenugreek powder used in the study did not meaningfully influence quail growth over the seven-week experimental period. Exploring the dynamics of feed intake, initial days (7 and 14) showed no significant differences among the groups. However, from day 21 onwards, a notable shift occurred. The control group consistently exhibited the highest feed intake, followed by the T2 (0.5% pennyroyal + 1% fenugreek) group, and the T1 (0.25% pennyroyal + 0.5% fenugreek) group, which displayed the most significant reduction. This trend indicated that the supplements, particularly at the higher concentration (T1), gradually decreased appetite over time, influencing total feed intake. The analysis of FCR revealed compelling insights into the impact of pennyroyal and fenugreek supplementation. Significant differences were observed at various time points (day 7, 14, 21, 28, 35, and 42) and over the entire 42-day period. On day 7, the FCR of the control group was significantly higher than that of the T2 group, while the T1 group exhibited an intermediate value. From day 14 onwards, the T1 group consistently demonstrated the lowest FCR, followed by the T2 group and the control group. This pattern persisted throughout the study, with notable differences in FCR values among the groups. Over the 42-day period, the T1 group exhibited the most favorable FCR, emphasizing the potential benefits of higher supplement concentrations in enhancing feed efficiency. The observed lack of impact on weight gain aligns with previous findings on chicken weight, suggesting that the supplements did not significantly influence overall growth. However, the significant reduction in feed intake, especially in the T1 group, indicates a potential role for pennyroyal and fenugreek in modulating appetite over time. This reduction in feed intake did not compromise weight gain, suggesting an improvement in nutrient utilization and feed efficiency. The data on FCR underscores a consistent improvement attributed to the supplementation, with the T1 group consistently outperforming the other groups. This finding has practical implications for poultry production, as it suggests that supplementing quail feed with pennyroyal and fenugreek powder can significantly enhance feed efficiency and lower FCR, particularly at higher supplement concentrations. While the study provides valuable insights, further research is warranted to optimize supplement formulations, doses, and durations. This is crucial for maximizing the benefits while minimizing potential adverse impacts, as indicated in studies on different poultry types and production systems. In conclusion, pennyroyal and fenugreek supplements show promise in improving feed efficiency in quails, opening avenues for further exploration and refinement of their application in poultry production.

Key Words: Japanese quail, pennyroyal, fenugreek, feed intake, feed conversion ratio, natural feed additive



ABSTRACTS OF ROOM 9

AGRIBUSINESS

Abstracts_ID : AGB 001

Cost Structure Analysis and Economic Scale in Dried Fish MSMEs in Bengkulu Province

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ABSTRACT: This study aims to analyze the cost structure and economies of scale of dried fish MSMEs in Bengkulu Province. This research analysis was selective by using cluster sampling based on the dried fish MSMEs in Bengkulu Province. The number of samples in this study was 157, using the census method. The entire population in this study was used as respondents, and data was collected through direct interviews using questionnaires that had been provided. The analysis method used is cost structure analysis with the Cobb-Douglas function model. Based on the results of the study, the largest variable cost component is found in the cost of fish raw materials, with a percentage reaching 81.19%, and the largest fixed cost component is found in equipment depreciation costs, with a percentage reaching 1.18%. The level of economies of scale of dried fish MSMEs in Bengkulu Province based on the results is in the condition of increasing return to scale because the elasticity of economies of scale in dried fish MSMEs is more than one, which is 2.41.

Key words: Dried fish, Cost structure, Economic scale, MSMEs

Abstracts_ID : AGB 002

Analysis Cost Structure and Economic of Scale of Rice Farming in Different Land Area Strata in Bengkulu Province

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ABSTRACT: This research aims to analyze the cost structure and economic scale of lowland rice farming on different land area strata in Bengkulu Province. The location for this research was selected by using cluster sampling. The proportionate stratified random sampling method was chosen for sampling in this study and obtained 175 farmers who were divided into three strata of land area. Cost structure analysis is carried out by calculating the cost components of the farming inputs used. The Cobb-Douglass cost function approach is used to determine the level of economic scale of lowland rice farming. The results show that the largest share of variable costs belongs to male labor costs with a percentage reaching 17.40% and agricultural equipment rental costs as the largest fixed cost component reaching 23.99% of total production costs. The level of economic scale for rice farming in Bengkulu province based on results is in a condition of increasing returns to scale with average economies of scale value of 6,566.

Keywords: cost structure, economies of scale, rice farming

Abstracts_ID : 003

Dynamics of Household Food Security and Its Determinants in Bengkulu Province

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ABSTRACT: This research aims to: 1) to analyse the dynamics of household food security in Bengkulu province. 2) to analyse what factors influence the dynamics of household food security in Bengkulu province. This research was conducted in Bengkulu Province with the consideration that Bengkulu Province is a province with a food security index level that ranks 26th out of all provinces in Indonesia in 2021. This research categorises the state of household food security in 2019-2020 with four categories, namely food security, food vulnerability, food insufficiency, and food insecurity. Based on the categorisation, it will be seen the changes that occur in the state of household food security in that year or can be called the dynamics of household food security, then analysed with descriptive analysis and using SEM-PLS analysis tools. The results of the analysis show that the level of household food security decreased by 28 per cent and increased by 24 per cent, and households that maintained their level of food security by 48 per cent. Based on these findings, the factors that have a significant effect are household economy, household access and household food security. The factor that does not have a significant effect is household demographics.

Keywords: dynamics of food security, food security, Structural Equation Modelling, Partial Least Square

Abstracts_ID : AGB 004

Consumer Preferences for Fruit in Muara Bangkahulu District, Bengkulu City

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ABSTRACT: Based on several previous research results, there are many criteria that influence consumer preferences for fruit. However, we need to know the main criteria that people consider when buying fruit. This research aims to find out the main factors that are taken into consideration and what consumer preferences are when buying fruit. The research location chosen was Muara Bangkahulu District, with the consideration that this area is one of the areas with quite a lot of fruit sellers in Bengkulu City. The sample was determined using the Virtucio formula, and 96 fruit buyers were found as respondents. The data used are primary and secondary. To answer the problem formulation, the AHP (Analytical Hierarchy Process) analysis method is used. The research results show that the main factor that consumers consider when buying fruit is price. This is because consumers have to fulfill other, more primary needs, so they buy fruit at a cheaper price according to their income. Furthermore, in purchasing fruit, consumer preferences show that Medan oranges are the main priority for the type of fruit chosen by consumers based on price, size, and availability. This is because the price of Medan oranges is cheaper than other types of fruit; the number of fruits per kg is not too much, but also not too little, and Medan oranges are always available in all fruit shops. Based on its quality and vitamins, green melon is the top priority. This is because consumers assess the taste as sweet and fresh, and the color of the fruit flesh varies and contains vitamins and minerals that the human body needs. Furthermore, consumer preferences are based on several criteria; Medan oranges are the main priority in terms of price, quality, size, availability, and vitamin content.

Key words: Preferences, Main factors, Fruit, AHP

Abstracts_ID : AGB 005

Competitive and Comparative Competitiveness of Dried Fish Msmes in Bengkulu Province

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ABSTRACT: This research has the objectives, namely 1) Knowing the competitive advantages of dried fish MSMEs in Bengkulu Province, 2) Knowing the comparative advantages of dried fish UMKM in Bengkulu Province, 3) Knowing how the government's role in the development of dried fish MSMEs in Bengkulu Province. The location of the study was determined by the three-stage cluster sampling method. The study sample was determined using the census method, which was 157 dried fish craftsmen. Data analysis using PAM (Policy Analysis Matrix) method. The results of the analysis show that dried fish MSMEs in Bengkulu Province have competitive and comparative advantages as seen from the PCR value of 0.43 and the DRCR value of 0.39 where the value is smaller than 1 (<1). Meanwhile, the role of the government is still unable to have a positive impact on dried fish MSMEs in Bengkulu Province.

Key words: dried fish, advantages competitive and compaarative, PAM.

Abstracts_ID : AGB 006

ANALYSIS OF THE USE AND SUBSTITUTION OF PRODUCTION FACTORS OF PADDY RICE FARMING IN DIFFERENT STRATA OF LAND AREA IN BENGKULU PROVINCE

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ABSTRACT: The purpose of this study is 1) to analyze what production factors affect rice production in different strata of land area in Bengkulu Province. 2) To analyze the level of input substitution in paddy rice farming in different strata of land area in Bengkulu Province. The location determination method uses three-stage cluster sampling with the proportionate stratified random sampling method, and the number of samples is 175 for rice farmers. Data analysis used in explaining the factors affecting rice production in different strata of land area is the cobb-douglass production function and input substitution rate analysis using the concept of marginal rate technical of substitution (MRTS). The results of the analysis show that only the land area factor (ha) has a real effect on production in all strata of land area. Meanwhile, in strata III, the combination of factors in the use of female labor has a real effect on rice production, and on the combined land area, the use of KCL fertilizer has a real effect on rice production. Only the combination of male labor and female labor in the narrow land strata (strata I) is fully substituted with a substitution elasticity value (ES) greater than 1 (≥ 1), while the combination of fertilizer inputs is only partially substituted. Meanwhile, in strata II, III, and combined, both the combination of fertilizer inputs and male and female labor are only partially substituted.

Keywords: Factor Production, Strata, Marginal Rate Technical of substitution (MRTS)

Abstracts_ID : AGB 007

ANALYSIS OF PREMIUM MELON MARKETING STRATEGIES IN BENGKULU CITY (CASE STUDY AT TOBOPONIK COMPANY BENGKULU CITY)

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ABSTRACT: Toboponik is one of the companies engaged in agriculture. The products offered by Toboponik are premium melons. The melons offered by Toboponik have a price that is much higher than the price of general melons. However, Toboponik always manages to sell out all the melons they offer. The objectives of this study are; 1) To identify the melon marketing strategy implemented by Toboponik; 2) To analyse the 4P Melon marketing mix by Toboponik. Data analysis was carried out descriptively Quantitative and the analysis tool used was Importance Performance Analysis (IPA). The results of the analysis show that Toboponik applies the Segmenting, Targeting, and Positioning (STP) strategy to market premium melons. Toboponik positions its products as superior products whose quality far exceeds other similar products and focuses its marketing on mothers of employees or wives of officials who are 35 years old and above, have a minimum education of Strata 1, and have an income above four million Rupiah. From the Importance Performance Analysis (IPA), Toboponik's premium melons have a good impression on its customers. Attributes that have a high level of importance and have high performance include flavour attributes, speed of delivery, ease of payment, service, and sweet guarantee. Some attributes that are considered important but less satisfying are, availability of melons, cleanliness of the place, price suitability, price affordability, discounts, and promotion through Instagram. Attributes that are considered excessive for consumers include shape perfection, colour brightness, weight, melon durability, shipping costs, advertisements via Whatsapp, and packaging.

Keyword: Toboponik, Premium Melon, Marketing Strategy, Importance Performance Analysis (IPA)

Abstracts_ID : AGB 008

Long-kong production and agricultural extension needs under the violent incidents in Narathiwat province: A case study of farmers who participated in the Learning Center for Agricultural Production at To-lang village Tanjong-Limo sub-district, Ra-Ngae district, Narathiwat province

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ABSTRACT: Long-kong is the important economic crop in Narathiwat province. The objectives of this research were to study long-kong production and agricultural extension guidelines of farmer from impact of the violent incidents in Narathiwat Province. A case study of farmers participating in the Learning Center for Enhancement of Agricultural Product Production (uncle Pin) Tor-Lang village Limo sub-district Ra-Ngae district, Narathiwat Province. Population in this study was a few 20 farmers who join the Learning Center for Agricultural Product Production Efficiency (uncle Phin) with an area of 2 rai or more of long-kong planting in Tanjong-Limo sub-district, Ra-Ngae district, Narathiwat province. Sample size by Taro Yamane simple random sampling was 20 farmers. A closed-ended question interview form was the tool for data compilation and data analysis was processed by computer programs. Statistics used included frequency, percentage, minimum value, maximum value, mean, and standard deviation. Results of the study found that most of the farmers were female (55.0 %) with the average age at 61.65 years. They finished senior primary school level or equivalent (40.0 %). Their average number of household member was 4.0 people. Their average experience in longkong plantation was more than 20.0 years. Their last year (Be. 2562) household revenue was 102,200.00 baht. Their average agricultural area was 2.0 rai. Their long-kong plantation was owner land (100.0 %) Chemical fertilizer formula 15-15-15 was used with organic fertilizers (100.0 %). Farmer demand of knowledge in long-kong plantation are (50.0 %) and pruning of branches (50.0 %). They also demand an agricultural acknowledge and extension needs in preparing planting area (50.0 %), prevention and eradication of diseases, insect pests and weeds (50.0 %), and they also demand of problems in fertilizers and chemicals were expensive (50.0 %). The agricultural extension guidelines should be organized on the necessary subjects or according to the long-kong farmer needs by training which has both lectures and practical exercises at the same time. The findings of this research will provide valuable information to policymakers as they formulate appropriate policies to develop long-kong production and agricultural extension guidelines.

Key words: Lon-kong farmers; agricultural extension need; Narathiwat province

Abstracts_ID : AGB 009

Analysis of the Trading System and Decision Making of Oil Palm Farmers in the Sale of Fresh Fruit Bunches (Case Study: Sibak Village, Ipuh District, Mukomuko Regency)

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ABSTRACT : The processing of oil palm plantations cannot be separated from trading activities, in the process of making sales decisions there are certainly factors that are taken into consideration for farmers to sell oil palm FFB to existing channels. The purpose of this study was to analyze the efficiency of oil palm FFB trading in Sibak Village, Ipuh District, Mukomuko Regency and analyze the factors that influence farmers decisions to sell oil palm FFB. The method of determining the location was carried out purposively, namely in Sibak Village, Ipuh District, Mukomuko Regency. The sampling method used purposive sampling with the criteria of independent smallholders who live in Sibak Village and have producing oil palm plantations (not fruiting sand). Trade efficiency in Sibak Village was analyzed with two indicators, namely farmer share and cost benefit ratio, while the factors influencing farmers decisions to sell oil palm FFB in Sibak Village were analyzed using Logistic Binomial Regression. The results showed that channel I (farmer - factory) was the highest efficient channel in Sibak Village with a farmer share value of 100%, and the cost benefit ratio value reached 5.52. The factors in this study (FFB price, FFB production, farm distance from home to land, farm experience, and ownership of transportation facilities) have a significant effect simultaneously. However, the variables that have a significant effect partially are only the FFB price variable and the FFB production variable. To get the maximum profit, oil palm farmers in Sibak Village should prioritize the option of trading Channel I by selling oil palm FFB directly to the factory.

Key words: Trading System, Palm Oil, Logistic Binomial Regression.



ABSTRACTS OF ROOM 10

ANIMAL SCIENCE AND AGRIBUSINESS

Abstracts_ID : ASC 010

Biosecurity Practices on Goat Farms: A Comprehensive Study in Girimulya Village, North Bengkulu Regency

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ABSTRACT: This research aims to evaluate biosecurity practices on ten goat farms in Giri Mulya Village, North Bengkulu Regency. The evaluation includes interviews with respondents and direct observation. The collected data was analyzed descriptively using a spreadsheet editor. Respondents' answers were adjusted to the level of risk using a numerical system of 1 to 3 to assess the level of biosecurity risk. Based on the questionnaire, the average age of goat farmers is 50 years (70% of respondents). The farmers have been running their businesses for over six years (80% of respondents). The educational background of 80% of farmers is elementary school. Each farmer keeps 7 to 10 goats. All farmers carry out isolation practices to protect goats from disease. This isolation is carried out on new arrivals, sick and newborn goats. Observations were also made regarding goat traffic, where sanitation was not carried out before entering the pen, and feed transport vehicles were also not sanitized. Sanitation practices are evaluated across all farming practices. One hundred percent of farmers carry out daily sanitation. Livestock pens are always cleaned to minimize animals such as flies and mice, which can cause disease transmission to livestock. Farmers always wash their grass scythes after using them; these tools are not borrowed. Manure is cleaned every day, and the manure that has been collected is placed in a position far from the cage used as fertilizer by the breeder. In conclusion, Sanitation in Biosecurity in Giri Mulya Village is classified as moderate (point 2). Improving and consultation with a veterinarian is required. However, traffic still needs a lot of improvement.

Keywords: Biosecurity, Farmers, Goats, Sanitations

Abstracts_ID : ASC 011

Evaluation of Feeding Management on Goat Farms (case study of Giri Mulya village)

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ABSTRACT: This study evaluates feeding management on goat farms in Giri Mulya Village, North Bengkulu Regency. Data in this study was obtained from interviews with respondents and direct observations in the field. This study aimed to analyze feeding management on goat farms in Giri Mulya Village. Giri Mulya Village is very suitable for research because the people in Giri Mulya Village have goats or cows on average. The interviews that respondents conducted obtained as many as 20 people. The data obtained is then analyzed, described in detail, and according to field conditions. From the questionnaire data, the average citizen who lives has a side job and the main job as a farmer. The average age of goat farmers is 40 to 60 years, and the educational background is 80% of SD graduates. The goats raised are more dominant types of Javanese Randu goats (90% of respondents). Farmers have raised goats for over five years (90% of respondents). Each breeder has from 5 to 10 goats. Feeding on this goat farm for feeding only uses forages such as field grass, foliage, and legumes (*Leucaena leucocephala*, *Alstonia scholaris*, *Calopogonium mucunoides*, and *Gliricidia sepium*). For the feeding system, the farmers apply the Adlibitum system (it is continuous). The remaining feed is usually mixed by farmers with feces and made into organic fertilizer. From the respondents' data, the farmers had never visited or attended counseling from the livestock and agriculture department. The farmers have not implemented a feed technology system such as silage feed. Goats are only in pens and are not removed or grazing. Key words: goat, goat farming, forag

Abstracts_ID : ASC 012

Management Analysis Of Broiler Chicken Rearing At Mr. Bimo Farm Pt Semesta Mitra Sejahtera Central Selebar, Betungan, Bengkulu

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ABSTRACT : Management of broiler chicken maintenance is very noteworthy, because of the determinants of high and falling production. So as to be able to estimate profits and sustainability/business improvement. Therefore, it is necessary to conduct a management analysis of broiler chicken maintenance. This study assessed good broiler chicken production practices in Bimo Farm, in Betungan subdistrict, Bengkulu Province, Bengkulu Province, from 2020 to November 2023. Farmers, DOC producers, and research team members participated in a focus group discussion (FGD) to discuss the farm's operation. Observation, census data, and things mentioned in the FGD were used to evaluate broiler chicken good farming practices. The farm, housing 30,000 broiler chickens, operates in partnership with a major company which supplies diets and medicines. Sanitation of poultry houses and the surrounding environment is a routine for the farmers in Bimo Farm. The infrastructure includes two closed-house units designed for optimal poultry rearing. However, the vaccination schedules did not follow the standard schedule for vaccination as listed on the assessment guidelines contained in the Regulation / Decree of the Minister of Agriculture Number 31 / Permentan / OT.140 /2/2014.. The diet provided by the partnering company meets the nutrient requirements of broiler chickens. The findings could contribute to developing more effective and sustainable broiler chicken farming practices in Indonesia. The management of broiler chicken rearing has met the assessment standards, which include seed management, cage management, feed and drink management, health management, daily management, and post-harvest management with an average score of 78% (passing level 2).

Key words : Broiler chicken, management, analysis

Abstracts_ID : ASC 013

Evaluation of Animal Protein Consumption in Indonesia Pre- during and Post-COVID-19 Pandemic

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ABSTRACT: Protein consumption in Indonesia is a complex issue influenced by various factors, including dietary habits, availability of food sources, and socioeconomic conditions. During the Covid-19 pandemic, adequate protein is frequently suggested to support immune function and overall health. Whether the COVID-19 pandemic affects protein consumption in Indonesia is unknown; therefore, this study aimed to investigate the effect of COVID-19 pandemic protein consumption measured before, during and after COVID-19. The data were collected in three consecutive periods: 2018 to 2019 (pre-COVID-19), 2020 to 2021(COVID-19) and 2022 (post-COVID-19) accessed from BPS (Statistics-Indonesia). People in Indonesia's daily protein intake in 2018 was 4.6 g, of which 2.02 g came from meat and 2.58 g from eggs and milk. In 2019, protein consumption increased to 5.36 g per capita per day, of which 2.50 g came from meat and 2.86 g from eggs and milk. However, a decline in consumption was found in 2020; it was 4.58 g, of which 2.42 g came from eggs and milk and 2.16 g came from meat. A total of 5.37 g for 2021, of which 2.96 g comes from meat and 2.41 g from eggs and milk. A decrease of 0,78 grams per capita per day was observed in all animal protein sources in 2021. The consumption rocketed to 6.55 g of animal protein in 2022, of which 3.73 g comes from meat and 2.82 g from eggs and milk. It can be concluded that the COVID-19 pandemic alters people's animal protein consumption in Indonesia.

Keywords: Protein consumption, Covid-19 pandemic, Indonesia

Abstracts_ID : ASC 014

PREVALENCE OF SUBCLINICAL MASTITIS AND TOTAL PLATE COUNT (TPC) OF GOAT MILK ON FARM X IN PADANG CITY, WEST SUMATRA

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ABSTRACT

Subclinical mastitis is an inflammatory condition of the udder gland without any visible symptoms in dairy animals. It should be detected periodically on any farm. This study aimed to determine the prevalence of subclinical mastitis dairy goats at Farm X in Padang City, West Sumatra. It was followed by counting the Total Plate Count (TPC) and pH values of milk of the subclinical mastitis udder gland detected. The method used was a survey of 18 lactating goats and laboratory analyses for milk quality. The results of the udder gland test were categorized for positive 1 (+), positive 2 (++), and positive 3 (+++) levels. It showed that the prevalence of subclinical mastitis at Farm X was 66.7%. Further, the TPC value of milk was 5.6×10^6 CFU/ml (+), 1.0×10^7 CFU/ml (++), and 1.5×10^7 CFU/ml (+++). The pH values were 6.91, 7.05, and 7.07, respectively. In conclusion, there is a high subclinical prevalence of mastitis on the farm, and thus, the TPC and pH values are above the Indonesian National Standard. The purpose of this study was to determine the prevalence of subclinical mastitis, Total Plate Count (TPC) value and pH of milk detected with subclinical mastitis at Farm X in Padang City. This study was conducted at Farm X, Padang City, West Sumatra, using 18 lactating goats. The method used was survey and continued with laboratory analysis to see the value of TPC and pH in subclinical mastitis milk. The variables used in this study were the prevalence of subclinical mastitis, TPC and pH values. The results showed that the prevalence of subclinical mastitis at Farm X was 66.7% and the TPC value of milk detected with subclinical mastitis was 1 (+): 5.6×10^6 CFU/ml, 2 (++): 1.0×10^7 CFU/ml, 3 (+++): 1.5×10^7 CFU/ml. The pH value of milk detected with subclinical mastitis was found to be + (6.91), ++ (7.05), +++ (7.07). Based on the results of this study, it can be seen that the TPC and pH values of milk detected by mastitis are above the standards set by BSNI (2011), namely for TPC < 1x and pH 6.3 - 6.8.

Keywords: dairy goat, disease, healthy milk, mastitis, traditional farm Subclinical mastitis, TPC, pH.

Abstracts_ID : ASC 015

Prediction of Marbling Fat in Live Fattening Beef by Ultrasound and Aging Period on Meat Quality

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ABSTRACT: This study was aimed to assess the accuracy of the assessment of marbling and carcass quality in live fattening cattle using ultrasound and to assess meat quality after different time aging periods. A total of 20 fattening cattle slaughtered at the local slaughterhouse were used as experimental animals. This study was allotted to 2 experiments, experiment 1: an assess of the accuracy of the assessment of marbling and carcass quality in live fattening cattle using ultrasound, and experiment 2: to assess meat quality after different time aging periods. The resulted from this study was found that an assessment of marbling in live fattening cattle using ultrasound was low accuracy 30 % (correct evaluated of 6 from 20 live fattening cattle). Besides, an evaluation of carcass quality in live fattening cattle using ultrasound was found that the deep of longissimus dorsi muscle (mm) were positive correlated with ribeye area (0.49, $p < 0.05$), if the deep of Longissimus dorsi muscle were increase the ribeye area were also increase. The study of the meat quality after different time aging periods was found that meat in 14 Day aging was higher pH (6.10 ± 0.80) than meat in 21 Day aging (5.72 ± 0.27) ($p < 0.05$). Furthermore, an evaluated of meat color was found that meat in 14 Day aging was low Lightness (L^*) (29.86 ± 0.13) than meat in 21 Day aging (29.96 ± 0.07) ($p < 0.05$). Besides, the meat in 14 Day aging was low cooking loss (%) (18.55 ± 8.40) than meat in 21 Day aging (33.36 ± 5.13) ($p < 0.05$). From the resulted of this study can concluded that the ultrasounds technology can using to assessment of marbling in live fattening cattle, but it still low accuracy. The carcass quality in live fattening cattle was evaluated by ultrasound indicated that the deep of Longissimus dorsi muscle were positive correlated with Ribeye area. Besides, meat aging for 14 Day period was higher quality than meat aging for 21 Day period in term of pH, Lightness color (L^*) and cooking loss (%)

Key words: Ultrasounds, Carcass, Fattening, Aging Beef

Abstracts_ID : AGB 010

Analysis Of Purchasing Decisions And Customer Satisfaction Levels With Kebab "Pisangqu" Products In Bengkulu City

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ABSTRACT: One of the most popular types of businesses in the community is micro, small and medium enterprises (MSME). Many MSME owners have made this sector one of the driving wheels of the country's economy. One of the MSME products in Bengkulu City is Kebab "Pisangqu". This research aims to 1) Analyzing the process of making purchasing decisions on Kebab "Pisangqu" products in Bengkulu City 2) Analyzing the factors related to the purchasing decision process of Kebab "Pisangqu" products in Bengkulu City 3) Analyzing the level of customer satisfaction with Kebab "Pisangqu" products in Bengkulu City. This research was conducted intentionally at Jalan Fatmawati Penurunan Kecamatan Ratu Samban Bengkulu City. Respondents in this study amounted to 100 people. The data used are primary and secondary data, and the data analysis used is descriptive analysis, Spearman Rank analysis, and Importance Performance Analysis and Customer Satisfaction Index analysis. The results showed that the total value of the consumer decision-making process in purchasing Kebab "Pisangqu" was quite necessary. Then there is a strong significant relationship with a positive direction between cultural, social, personal, and psychological factors with the decision to purchase Kebab "Pisangqu". This research the level of importance is greater than the level of performance of Kebab "Pisangqu", therefore the business owner of Kebab "Pisangqu" needs to improve its performance to match customer expectations, especially for attributes whose performance is not so good. The overall Customer Satisfaction Index value is 91.46% which is included in the very satisfied category.

Key words: Kebab "Pisangqu", Purchase Decision Making Process, Importance Performance Analysis, Customer Satisfaction Index.

Abstracts_ID : AGB 011

Analysis Of Production And Allocative Efficiency Of Paddy Rice Farming In Different Irrigation Systems In Bengkulu Province

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ABSTRACT. Research on production analysis and allocative efficiency of paddy farming on different irrigation systems Bengkulu Province was conducted, because farming in Bengkulu Province uses different irrigation systems in each region. The difference in the use of irrigation systems by farmers will cause differences in the production. The purpose of the study was to determine the level of production, factors affecting production, and allocative efficiency of paddy farming on different irrigation systems in Bengkulu Province. The method of determining the location is done by cluster area sampling. The method of determining sample used a simple random sampling method with as many as 41 farmers of technical irrigation rice and 30 farmers of simple irrigation rice. Descriptive analysis was used to explain the level of production of paddy on different irrigation systems, the use of the Cobb-Douglas production function to determine the factors affecting the production of paddy rice, and the analysis of allocative efficiency by comparing the value of the marginal product with the input price of each production factor used. The results showed that the production of technically irrigated paddy farming is higher than simple irrigated paddy farming. Factors affecting the production of technically irrigated paddy are land area and phonska fertilizer, while in simple irrigated paddy rice farming, land area and irrigation dummy affect the production of paddy rice in Bengkulu Province. Analysis of the allocative efficiency of the use of production factors of land area and phonska fertilizer in technical irrigated rice paddy farming and the use of land area factors in simple irrigated rice paddy farming has not been efficient. To be able to increase the production of paddy rice, it is expected that the government can add technical irrigation channels in Bengkulu Province, and there is counseling related to the use of production factors.

Key words: Efficiency Allocative, Paddy Rice, Production, Simple irrigation, Technical irrigation

Abstracts_ID : AGB 012

Factors Influence the Acceptability of Smart Farming Technologies among Youth in Agriculture

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ABSTRACT: Smart farming can become a catalyst for youth to participate in the agriculture sector. Smart farming, through the integration of technology and innovation, provides a more appealing and modern alternative to traditional agricultural practices. This can help to change the perception of farming among youth towards agriculture as an outdated and unappealing career choice, instead showcasing it as a viable and lucrative option. This study discusses the factors that influence the acceptability of smart farming technologies among youth. Several factors influenced the youth to accept smart farming technologies in agricultural practices, such as knowledge, attitudes, and awareness. Hence, the objectives of this study are: 1) to measure the relationship between knowledge, attitude, and awareness towards the acceptance of smart farming technologies; and 2) to identify the highest factor influencing the acceptance of smart farming technologies among youth in agriculture. The data were collected using a simple random sampling technique through a survey questionnaire. The respondents involved in this study were undergraduate agriculture students (from second year and above) who studied at the Universiti Putra Malaysia (UPM). A total of 245 respondents were employed from the total population (669) using the Raosoft Calculator. Data collection was conducted through Google Forms and has been analysed using SPSS version 27. The significance of each independent variable in affecting youth's acceptance of smart farming technologies is further supported by the regression analysis. These findings highlight the strong relationship between positive attitudes towards smart farming technology and its adoption among youth. Hence, this study emphasises the importance of knowledge, attitude, and awareness in developing strategies to promote the wider use of smart farming technologies among the youth. This study also shed light on the importance of smart farming technology in facilitating agriculture technology, through youth participation and empowerment.

Keywords: Youth, Smart Farming Technologies, Knowledge, Attitudes, and Awareness.

Abstracts_ID : AGB 013

THE FACTORS THAT AFFECT THE EXISTENCE OF AGRICULTURAL FARMER GROUPS (A Study in Cempaka Permai Urban-Village, Gading Cempaka Sub- District, Bengkulu City)

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ABSTRACT: An essential element of Indonesia's agricultural development is farmer groups. However, not all of the farmer groups in the Cempaka Permai Village region can function as a platform for the advancement of farmers. An essential element of Indonesia's agricultural development is farmer groups. However, not all of the farmer groups in the Cempaka Permai Village region can function as a platform for the advancement of farmers. Group existence can be seen as an effort made to show the existence of the group in the context of its social environment. Potentials that can affect existence are the dynamics of farmer groups and the role of agricultural extension workers. This research was conducted purposively in Cempaka Permai Village, Gading Cempaka Sub-district, Bengkulu City. There are four farmer groups in Cempaka Permai Village, namely Poktan Enggang, Poktan Rangkong, Poktan Pelatuk, and KWT Rangkong which have a total membership of 60 and all members were involved in this study. Data analysis used the descriptive qualitative analysis method, Likert scale, and Partial Least Square (PLS). The results of the analysis show the level of existence of farmer groups in Cempaka Permai Urban Village, Gading Cempaka Subdistrict, in a very high category, the dynamics of farmer groups in Cempaka Permai Village, Gading Cempaka Subdistrict, are in a very high category, and the role of extension workers has a very high category. Factors affecting the existence of farmer groups found that the dynamics of farmer groups have a positive and significant impact on the existence of farmer groups, while the role of extension workers has a positive and insignificant impact on the existence of farmer groups.

Key words: Farmer group, existence, group dynamics, agricultural extension.