Book of Abstract

The 4th ISEPROLOCAL 2024

International Seminar on Promoting Local Resources for Sustainable Agriculture and Development 2024

"Synergy to strengthen national food security"

Faculty of Agriculture
University of Bengkulu,
18-19 September 2024

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OPENING REMARK FROM THE DEAN OF FACULTY

Dear Distinguished Participants, Colleagues, and Guests,

With great enthusiasm and honor, I welcome you to the 4th International Seminar on Promoting Local Resources for Sustainable Agriculture and Development (ISEPROLOCAL) 2024. This year, our theme—"Synergy to Strengthen National Food Security"—reflects our collective commitment to addressing one of the most critical challenges of our time.

As we embark on this seminar, we stand at a pivotal moment where the integration of local resources into our agricultural systems is essential for the security and sustainability of our food supply. The theme underscores the importance of stakeholder collaboration and synergy to bolster national food security through innovative and sustainable practices.

The insights and research presented here are vital for developing strategies that enhance agricultural productivity, promote resource efficiency, and ensure food availability and stability for future generations. By fostering partnerships and sharing knowledge, we can drive meaningful change and create resilient food systems that benefit local communities and the nation.

I would like to extend my most profound appreciation to all contributors and participants who have dedicated their time and expertise to this seminar. Your engagement is crucial to our discussions' success and our goals' advancement.

As we come together to explore, debate, and innovate, let us remain focused on our shared objective: strengthening our food systems and securing a sustainable future for all. May the interactions and discoveries from this seminar inspire continued collaboration and progress in agriculture.

Once again, welcome to ISEPROLOCAL 2024. I wish you a productive and inspiring seminar.

Best regards,

Dr. Indra Cahyadinata, S.P., M.Si
Dean, Faculty of Agriculture

OPENING REMARK FROM THE CHAIRMAN COMMITTEE

Dear Participants and Distinguished Guests,

On behalf of the Faculty of Agriculture at the University of Bengkulu, it is my great pleasure to welcome you to The 4th International Seminar on Promoting Local Resources for Sustainable Agriculture and Development (ISEPROLOCAL) 2024.

We are delighted to present this Book of Abstracts, which encapsulates the essence of the groundbreaking research and innovative ideas that will be shared during our conference. It is with great enthusiasm that I greet you as we embark on this important conference, which represents a significant gathering of minds dedicated to advancing our understanding and practices in local resources use for sustainable agriculture.

This collection of abstracts offers a comprehensive preview of the pioneering research and innovative solutions that will be presented during the seminar. Each abstract reflects the dedication and expertise of our contributors, who have worked diligently to address the pressing challenges to reach food sovereignty.

As you delve into these abstracts, you will discover a wide range of topics and perspectives that highlight the critical issues and creative approaches being explored. The insights and knowledge shared here are not only a testament to the hard work of our presenters but also a foundation for the dynamic discussions and collaborations that will take place during the seminar.

I encourage you to engage actively with the content presented, and to take advantage of the opportunity to connect with fellow attendees. Together, we can foster new ideas, forge valuable partnerships, and drive meaningful progress in our field.

Thank you for your participation and commitment to making a positive impact. I look forward to a stimulating and productive seminar.

Best regards,

Dr. Ir. Nurmeiliasari, S.Pt., M.Sc.Ag.
Chairman of ISEPROLOCAL

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SCHEDULE OF THE 4th ISEPROLOCAL
FACULTY OF AGRICULTURE
UNIVERSITY OF BENGKULU

"The 4th International Seminar on Promoting Local Resources for Sustainable Agriculture and Development (ISEPROLOCAL) 2024"
"Synergy to Strengthen National Food Security"

Gedung Layanan Terpadu University of Bengkulu
Wednesday-Thursday, 18-19 September 2024

18 September 2024			
No	**Time**	**Event**	**Information**
1	07.30 to 08.00 a.m.	**Registration** Participants	Committee
2	08.00 to 08.30 a.m.	**Opening**: 1. Al Quran Recitation (08.00-08.03 a.m.) 2. Invocation (Do'a) (08.03-08.05 a.m.) 3. Traditional Welcoming Dance (08.05-08.10 a.m.) 4. National Anthem Indonesia Raya (08.10-08.15 a.m.) 5. Report (Chairman of the committee/ Dr. Nurmeiliasari, SPt., M. Sc. Agr (08.15-08.20 a.m.) 6. Opening Remarks (Rector of University of Bengkulu) Dr. Retno Agustina Ekaputri, S.E., M.Sc (08.20-08.30 a.m.)	MC: Syafa Aisyah Putri and Fikri Lutfi Fahmi
2	08.30 to 08.40 a.m.	**Break** (Traditional Dance)	
3	08.40 to 10.30 a.m.	**Keynote Speaker** (Session I): 1. Dr. Idha Widi Arsanti, SP, MP (BPPSDM -Minister of Agriculture, The	Moderator: Prof. Ir. Fahrurrozi, M.Sc. Ph.D.

18 September 2024			
No	**Time**	**Event**	**Information**
		Republic of Indonesia) (08.40-09.00 a.m.) 2. Jenderal TNI H. Agus Subiyanto, S.E., M.Si-(Panglima Tentara Nasional Indonesia) (09.00-09.20 a.m.) 3. Dr.Ir. H. Audy Joinaldy, S.Pt., M.Sc., M.M., IPM., ASEAN.Eng (Chairman of Indonesian Society of Animal Science) (09.20-09.40 a.m.)	
4	09.40 to 10.00 a.m.	**Panel Discussion**	Moderator: Prof. Ir. Fahrurrozi, M.Sc. Ph.D.
5	10.00 to 11.40 a.m.	**Keynote Speaker** (Session II): 1. Dr. Mulyoto Pangestu/ Monash University Australia (10.00-10.30 a.m.) 2. Dr.Maja Slingerland/ Wageningen University Netherland (10.30-10.50 a.m.) 3. Ybhg. Prof. Dr. Yap Chee Kong/Universiti Putra Malaysia (10.50-11.10 a.m.) 4. Prof. Zainal Muktamar/ University of Bengkulu Indonesia (11.10-11.30 a.m.) 5. Prof. Mehmet Bora Kaydan/ Cukuriva	Moderator: Prof. Heri Dwi Putranto, S.Pt., M.Sc., Ph.D

18 September 2024			
No	**Time**	**Event**	**Information**
		University, Turkey (11.30-11.50 a.m.)	
6	11.50 to 12.10 p.m.	**Panel Discussion**	Moderator: Prof. Heri Dwi Putranto, S.Pt., M.Sc., Ph.D.
7	12.10 to 01.00 p.m.	**Lunch Break** (Video Watching)	Committee
8	01.00 to 04.00 p.m.	**Parallel Session**	Committee
9	04.00 to 05.00 p.m.	**Closing and Announcement** The Best Paper and Presenter	MC: Syafa Aisyah Putri and Fikri Lutfi Fahmi

19 September 2024 (Fieldtrip-City Tour)			
No	**Time**	**Event**	**Information**
1.	08.00-08.30 a.m.	The gathering will be held at the Faculty of Agriculture, University of Bengkulu.	Committee and Fieldtrip Participants
2.	08.30-09.00 a.m.	Visiting Marlborough Fort	Committee and Fieldtrip Participants
3.	09.00-10.00 a.m.	Visiting to Rumah Pengasingan Soekarno	Committee and Fieldtrip Participants
4.	10.00-10.30 a.m.	Visiting toWisata oleh-oleh Anggut	Committee and Fieldtrip Participants
5.	10.30-11.00 a.m.	Visiting to Rumah Fatmawati	Committee and Fieldtrip Participants
6.	11.00-11.30 a.m.	Visiting Taqwa Berendo Mosque	Committee and Fieldtrip Participants
7.	11.30-12.15 a.m.	Prayer to Jamik Mosque	Committee and Fieldtrip Participants
8.	12.30-1.00 p.m.	Lunch Break	Committee and Fieldtrip Participants
9.	1.00- 2.00 p.m.	Visiting to Pantai Panjang	Committee and Fieldtrip Participants

Room 1: Crop Production and Breeding

Moderator : Prof. Ir. Nanik Setyowati, M.Sc., Ph.d
Co-Moderator : Maulana Insanul Kamil, S.P., M.Si.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	CPB-001	**Dwi Wahyuni Ganefianti**, Herry Gusmara, and Muhammad Ervan Nurhames	Variability, Heritability and Genetic Advance of Chilli Pepper Agronomic Characters in Histisols
2	13.07-13.14	CPB-002	**Reny Herawati**, Masdar, and Mimi Sutrawati	Screening of Inbred Rice Line from Crossing Local Varieties for Drought Stress Tolerance using Polyethyleneglycol at Seedling Stage
3	13.14-13.21	CPB-003	**Nanik Setyowati**, Sumardi, Ferry Ro'is, and Zainal Muktamar	Enhancing Sorgum (*Sorghum bicolor*) Productivity Using Soil Amelioration in Ultisols
4	13.21-13.28	CPB-005	**Marwanto**, Diega Royan Simarmata, and Sigit Sudjatmiko	Optimal Combination of Inorganic Nitrogen Fertilizer and Vermicompost for the Growth and Yield of Sweet Corn in Ultisols
5	13.28-13.35	CPB-006	**Marulak Simarmata**, Utami Febrianti, and Fahrurrozi	Cultivation of Peanuts (*Arachis hypogaea* L.) in Ultisol of Coastal Area Using Ameliorants of Poultries' manure and Mycorrhiza
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	CPB-008	**Yulian**, Ade Bagus Bachtiar Manik, Fahrurrozi, Supanjani, and Septiana Anggraini	Effect of Slip and Accession on Drought Tolerance of Pineapple Seedling Through Proline Level
7	13.47-13.54	CPB-009	**Marlin**, Marulak Simarmata, Atra Romeida, Fika Yuni Irmanita, Masdar, Rustikawati, and Reny Herawati	Characterization of Morphological Changes in Shallots (*Allium cepa* var. Aggregatum) in Response to Gamma Ray Irradiation Treatment

No	Time	Abstract_ID	Authors	Topic
8	13.54-14.01	CPB-012	Nurwahid Hidayat, **Fahrurrozi**, Zainal Muktamar, Yulian, and Uswatun Nurjanah	Effect of NPK Fertilizer and Dolomite on Growth and Yield of Purple Eggplant (*Solanum melongena* L.) in Ultisols
9	14.01-14.08	CPB-013	Muhammad Aulia Rahman, **Dede Suhendra**, and Muhammad Parikesit Wisnubroto	Effect of Apokol Location and KNO3 Application on Physiological Characters, Viability and Growth of Aren (*Arenga pinnata* Merr) Seeds
10	14.08-14.15	CPB-004	**Dodo Handoko Dwi Putra**, Yulian, Faiz Barchia, Alnopri, Marulak Simarmata, and Ridoi Pangaribuan	Growth Performance of 10 Accessions of Local Food Taro Plants Against Different Levels of Waterlogging from Coastal Areas of Bengkulu Province
	14.15-14.20	**Q & A Session**		
11	14.20-14.27	CPB-007	**Amisnaipa**, Meksy Dianawati, Atin Yulyatin, and Bebet Nurbaeti	Potato Production with Various Types and Dosage of Organic Fertilizers
12	14.27-14.34	CPB-010	**A. Romeida**, G. R. Aditya, H. Pujiwati, Masdar, and Supanjani	Evaluation of Soybean Varieties for Salinity Tolerance
13	14.34-14.41	CPB-011	**Mustikarini ED**, Prayoga GI, and Muhartoyo	Correlation of Agronomic Traits to Yield of Upland Rice Lines in Ultisol Soil, Belitung Regency
14	14.41-14.48	CPB-014	**Ni Luh Putu Indriyani**, Jumjunidang, Sri Hadiati, Tri Budiyanti, Riska, Ellina Mansyah, Farihul Ihsan	Superiority Test of 'Hilosia' Dragon Fruit Variety Candidate
15	14.48-14.55	CPB-015	Anas, **Gungun Wiguna**, Syariful Mubarok, Tri Handayani, Imas Rita Saadah, and Hiroshi Ezura	A Study on Improving Tomato Shelf Life Through Backcrossing Selection and Correlation Analysis of Sletr1-2 Allele
	14.45-15.00	**Q & A Session**		

Room 2: Crop Production and Breeding

Moderator : Prof. Dr. Ir. Marlin, M.Sc.
Co-Moderator : Maulana Insanul Kamil, S.P., M.Si.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	CPB-016	**Hesti Pujiwati**, Fahrurrozi, and M. Noerzohri Ramadan	Growth and Yield of Pakchoi Plant in Various Combination of Market Waste Liquit Organic Fertilizer Doses and Compound NPK Fertilizer
2	13.07-13.14	CPB-018	**Catur Herison**, Rustikawati, Sukisno, Winanda Evityontari, Usman Kris Joko Suharjo, and Supanjani	Study on Genetic Variance and Heritability of Aluminium Tolerance Traits in Cayenne Pepper (*Capsicum annuum* L.)
3	13.14-13.21	CPB-019	**Supanjani**, Roberto Oktavianus Sigalingging, Fahrurrozi, Yulian, Mohammad Chozin, and Usman Kris Joko Suharjo	Pruning for Sustainable Fruit Production of Black Mulberry
4	13.21-13.28	CPB-021	**Rustikawati**, Catur Herison, and Mimi Sutrawati	Inheritance of Salinity Tolerance in Bird Pepper
5	13.28-13.35	CPB-024	**Sigit Sudjatmiko**, Heni Triana, and Dotti Suryati	Optimizing Shallot Growth and Yield Using Manure Compost
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	CPB-029	**Wuri Prameswari**, Anissa Fauziah, Anandyawati, and Entang Inoriah	Variability of Shoot and Roots traits Soybean for Salt Stress under Hydroponic at The Early Vegetative Growth Stage
7	13.47-13.54	CPB-030	**M. Handajaningsih**, A.P. Putra, H. Widiyono, Marwanto	Yield and Quality of Cantaloupe (*Cucumis melo* L. var. Cantalupensis) on the Application of Three Sources and Dosages of Manure

No	Time	Abstract_ID	Authors	Topic
8	13.54-14.01	CPB-017	**Baiq Nurul Hidayah**, Muhammad Tahir Hamsyah, Mohammad Rani, Nurhaedah, Sirajuddin, Imam Gazali, Agus Hafid, Supardi, Mardiana, and Aris Pramudia	Opportunities and Challenges for the Development of West Nusa Tenggara Province as a Garlic Seed Production Center in Indonesia
9	14.01-14.08	CPB-020	**U.K.J. Suharjo**, H. Pudjiwati, T. Pamekas, S. Supanjani, and A. P. Utama	Effects Of Ab-Mix Rates and Watering Time on The Growth and Yield of Black Potato Crops (*Plectranthus rotundifolius*)
10	14.08-14.15	CPB-022	Retno Pangestuti, Valentina D.S. Handayani, **Sigid Handoko**, Hermawati Cahyaningrum, Sri Agustini, Paulina Evy R. Prahardini, Cahyo Prasetyo, Sri Wahyuni Budiarti, Wahyu Adi Nugroho, Arif Anshori, Heni Sulistyawati, Yeyen Prestyaning Wanita, Vita Taufika Rosyida, and Riky Sianipar	Study on Population Density and Mulch Effectiveness in Early Growth of Onions Seedling
	14.15-14.20	**Q & A Session**		
11	14.20-14.27	CPB-023	Ita Yustina, Mizu Istanto, Rudi Cahyo Wicaksono, Susi Wuryantini, Otto Endarto, Unun Triasih, Lyli Mufidah, and **Diding Rachmawati**	Post-harvest Characteristics of Cabbage using Natural Pesticide Citronella Oil:
12	14.27-14.34	CPB-025	**Ramdhiany Putri Arisandy**, Widodo, and Sigit Sudjatmiko	The Effect of Liquid Organic Fertilizer and Compost on the Growth and Yield of Shallots

No	Time	Abstract_ID	Authors	Topic
13	14.34-14.41	CPB-026	**Maria Viva Rini**, Rumiatun, Fitri Yelli, and Agus Karyanto	Study of Arbuscular Mycorhizal Fungi Population and Diversity in Robusta Coffee (*Coffea canephora* Pierre) Plantation in The District of West Lampung Indonesia
14	14.41-14.48	CPB-027	Kiki Kusyaeri Hamdani, **Gungun Wiguna**, Anas, Syariful Mubarok, and Hiroshi Ezura	Correlation Analysis and Multi-Stage Selection for Extended Shelf Life in Tropical Tomato Breeding Using the Sletr1-2 Allele
15	14.48-14.55	CPB-028	**Faiq Alya Nugraha**, Sigit Sudjatmiko, Zainal Muktamar, Fahrurrozi, and Priyono Prawito	Development of Biochar on Yield Growth and the Quality of Sweet Corn in Coastal Land
	14.45-15.00	**Q & A Session**		

Room 3: Social, Economy, and Policy

Moderator : Prof. Dr. Ir. Ketut Sukiyono, M.EC.
Co-Moderator : Lathifah Khairani, S.P., M.Sc.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	SOC-001	**Ketut Sukiyono** and Handoko Hadiyanto	Exchange Rates and Prices Variability and Their Effect on Dynamics Demand for Indonesian Fresh and Frozen Tuna Exports
2	13.07-13.14	SOC-004	Nadia Putri Khairunnisa, **Gita Mulyasari**, Agung Trisusilo, Nola Windirah, Redy Badruddin, and Basuki Sigit Priyono	Multidimensional Poverty of Labour Fisher Households According to the Indonesia Central Bureau of Statistics Indicators in Bengkulu City
3	13.14-13.21	SOC-005	**Muhamad Mustopa Romdhon**, Agung Trisusilo, Andi Irawan, Nola Windirah.	Supplier's Satisfaction Level in The Fresh Fruit Bunch Supply Chain at Bengkulu Province
4	13.21-13.28	SOC-006	Reflis, **Agung Trisusilo**, M. Mustopa Romdhon, and Andi Irawan	Business Performance and The Level of Satisfaction in The System of Supply Chain Fresh Fruit Bunches (FFB) of Oil Palm Bengkulu Province
5	13.28-13.35	SOC-007	**Satria Putra Utama**, M. Zulkarnain Yuliarso, and Ahmad Rahmawan	Farmers' Readiness in Adopting Superior Hybrid Corn Seeds, Bengkulu Province, Indonesia.
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	SOC-009	Lusi Oktapiani, M. Zulkarnain Yuliarso, and **Nyayu Neti Arianti**	Contribution of Women in Household Decision Making (Case Study of Women Selling Rejected Laying Hens in Pagar Alam City South Sumatera Province)
7	13.47-13.54	SOC-012	**Lathifah Khairani**, Rihan Ifebri, Hariz Eko Wibowo, and Netta Agusti	Socio-economic Determinants of Multidimensional Poverty in Bengkulu City: A Household Level Analysis

No	Time	Abstract_ID	Authors	Topic
8	13.54-14.01	SOC-015	**Rahmi Yuristia**, Ihvana Nurbayanti, and Gita Mulyasari	Socio-Economic Impacts of Establishing Palm Oil Company: A Case Study in Pondok Kelapa Village, Central Bengkulu District
9	14.01-14.08	SOC-002	Rosnita, Roza Yulida, Eliza, Novia Dewi, **Yulia Andriani**, Fanny Septya, Meki Herlon	The Role of Extension Workers and Farmers' Perceptions in Digitizing Rubber Marketing in Kuantan Singingi District, Indonesia
10	14.08-14.15	SOC-003	**Novitri Kurniati**, Heri Dwi Putranto, and Jafrizal	Farmers' Perceptions of Sustainable Bioindustrial Agriculture in Bengkulu Province
	14.15-14.20	**Q & A Session**		
11	14.20-14.27	SOC-008	**Ridha Rizki Novanda**, Ulfah Anis, Nola Windirah, and Ellys Yuliarti	Investigating Consumer Willingness to Try 'Nata De Banana Peel' – An Innovative Product from Banana Peel Waste
12	14.27-14.34	SOC-010	Waluyo, Agus Suprihatin, **Suparwoto**, and Jumakir	Farming Efficiency Analysis and Farmers' Perceptions of Red Chili Proliga Innovation in South Sumatra
13	14.34-14.41	SOC-011	**Vina Lorenza**, Nola Windirah, Basuki Sigit Priyono, Redy Badruddin, and Netta Agusti	Analyze of E-Commerce Revenue, Consignment, and Store of Kalamansi Orange Syrup Product on MSMEs Putri Bengkulu in Bengkulu City
14	14.41-14.48	SOC-013	**Hariz Eko Wibowo**, Rihan Ifebri, Lathifah Khairani, and Netta Agusti	Clustering of Food Security Areas in Bengkulu Province using Biplot Analysis Approach
15	14.48-14.55	SOC-016	**Resti Prastika Destiarni**, Elys Fauziyah, and Ahmad Syariful Jamil	Determinants Of Womanpreneurs' Halal Awareness in The Management of Madura Traditional Culinary MSMEs
	14.45-15.00	**Q & A Session**		

No	Time	Abstract_ID	Authors	Topic
16	15.00-15.07	SOC-017	Erlina Rufaidah, **Surnayanti,** and Derra Adisetya Pratama	Marketing Optimization Strategy for Trigona Honeybees in Rajabasa Sub District South Lampung Regency, Indonesia
17	15.07-15.14	SOC-018	**Alimansyah**, Gabriel Lele, Yuyun Purbokusomo, and Indri Dwi Apriliyanti	Empirical Analysis of Organizational Regulatory Policies and Citizen's Open Participation in Co-Production of Pulesari Tourism Village Innovation, Sleman, Yogyakarta
18	15.14-15.21	SOC-019	**Muhammad Fadhli Fadhillah S**, Ekawati Sri Wahyuni, Nuraini Wahyuning Prasodjo	The Role of Elderly School in Empowering the Elderly Community in Rural Areas
19	15.21-15.28	SOC-020	**Defi Ermayendri**, Marulak Simarmata, Wahyudi Arianto, Reflis, Riwandi, and Ketut Sukiyono	Analysis of Perceptions and Factors Influencing the Willingness to Pay (WTP) of Bengkulu City Residents for Waste Management
20	15.28-15.35	SOC-021	**Ririn Nopiah**, Azansyah, Bima Prasetya Kumara, and Retno Agustina Ekaputri	Degradation of the Potential Commodity Sector in Southern Sumatra: Will It Be Affected by Climate Change?
21	15.35-15.42	SOC-022	**Redy Badrudin**, Reflis, Rahmi Yuristia, and Muhammad Iqbal	Visitor Satisfaction Problems of the Kampoeng Durian Agritourism and Mapping Its Solution using a model SERVQUAL
22	15.42-15.49	SOC-023	**Apri Andani**, Muhammad Mustopa Romdhon, Reflis, and Irnad	The Analysis of Factors Influencing Smallholder Farmers' Willingness to Participate or Not in Oil Palm Replanting Program
	15.49-16.00	**Q & A Session**		

Room 4: Food Science and Agriculture Technology

Moderator : Yansen, S.Hut., M.Sc., Ph.D.
Co-Moderator : Arina Fatharani, S.T.P., M.Sc.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	FAT-001	**Devi Silsia**, Marniza, Syafnil, Ika Gusriani and Syafira Nur Assyifa Batubara	Formulation of Herbal Tea Bags Blend of Agarwood (*Aquilaria malaccensis* Lamk.) Leaves with Cinnamon Bark and Its Effect on Physico-Chemical Properties
2	13.07-13.14	FAT-004	**Faulina Maissy**, Arina Fatharani, and Yuwana	The Effect of Drying Methods and Body Parts on The Qualities and Microbial Contamination of Dried Octopus (*Octopus* Sp.)
3	13.14-13.21	FAT-005	Yessy Rosalina, **Firmansyah**, and Devi Silsia	Isolation of Fungal Species in Gelamai with Various Packaging in Storage
4	13.21-13.28	FAT-006	**Icha Agnesia Deyatri**, Yuwana, and Arina Fatharani	Impact Bruising of Red Barangan Banana fruits (*Musa acuminata* Colla) with Different Ripening Stages
5	13.28-13.35	FAT-007	**Leandra Faraneda**, Ulfah Anis, and Laili Susanti	Peel Splitting in Barangan Merah Banana (*Musa acuminata* Colla)
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	FAT-008	**Mike Nurmala Sari**, Budiyanto, Ulfah Anis, and Devi Silsia	Physicochemical and Organoleptic Characteristics of Instant Seasoning for Palm Fruit Extract Curry using Foam Mat Drying Method
7	13.47-13.54	FAT-012	**Ika Gusriani**, Nuraini, and Hidayat Koto	Analysis of Customer Satisfaction Towards "Sale Pisang" Products of Lenisa MSME in Belitang Madang Raya District, East Ogan Komering

No	Time	Abstract_ID	Authors	Topic
8	13.54-14.01	FAT-013	**Alfendi Nurichsan Virdiansyah**, Yuwana, Marniza, and Arina Fatharani	Physical, Chemical, and Organoleptic Properties Red Barangan Banana (*Musa acuminata*) Salai Produced from Various Fruit Ripening Stages by Operating YSD-UNIB18 Hybrid Dryer with Biomass Heat Source
9	14.01-14.08	FAT-014	Santun Janji Kabul Santoso, **Selly Ratna Sari**, Marniza, and Budiyanto	Development Of Wet Noodles (Aceh Noodles) Based on Mocaf (Modified Cassava Flour) With the Addition Provitamin a From Red Palm Oil Olein (RPOO)
10	14.08-14.15	FAT-015	Mares Gabriella Purba, Laili Susanti, and **Fitri Yuwita**	Effect of Camparison of Purple Sweet Potato (*Ipomea batatas* L.), Red Bean (*Vigna angularis*) and Maizena Flour on The Characteristics of Snack Bars
	14.15-14.20	**Q & A Session**		
11	14.20-14.27	FAT-002	**Adulsman Sukkaew**, Jutamas Kaewmanee, and Wasantanawin Harinppanwich	The shelf-Life Extension and Sensory Evaluation of Film Enriched with Velvet Tamarind Seed Extract for Chicken Sausage Wrapping
12	14.27-14.34	FAT-003	Noviati, S.M., Widodo, H.S., Pratiwi, D., Hakim, L., and **Wahyuningsih, R**	Gelatin From Broiler Chicken Eggshell Membrane: Characteristics and Antioxidant Properties
13	14.34-14.41	FAT-009	**Irna Dwi Destiana**, Fenny Aprilliani, Roni Suhartono, and Sajidah Nur Baeti	Combination of Sugarcane Bagasse Fiber and Pineapple Peel on the Acceptability and Moisture Content of Cassava Starch Based Biodegradable Foam.

No	Time	Abstract_ID	Authors	Topic
14	14.41-14.48	FAT-010	**Lina Ivanti**, Miswarti, Wilda Mikasari, Harwi Kusnadi, Selma Noor Permadi, and Taufik Hidayat	Characterization of Bengkulu Accession Millet (*Setaria italica* L. Beauv) and Its Application in Flavor-Enhanced Roll Cakes
15	14.48-14.55	FAT-011	Nada Lahohya, Dareeya Latehmuhama, Afnan Binmayeng, Tasneem Dorni, and **Diana Madtapong**	Evaluating the Oil Absorption Efficiency of Bamboo Sheaths to Develop Natural, Safe, and Effective Oil Blotting Paper for Fried Foods
	14.45-15.00	**Q & A Session**		
16	15.00-15.07	FAT-016	**Sri Wulandari**, Selly Ratna Sari, and Fitri Yuwita	Analysis of Antioxidants, Color, Moisture Content of Coffee Noodles Using Coffee Extract and Powder
17	15.07-15.14	FAT-017	**Uthisanon P.**, Natasan Y., Makon T., Buakoed R., Taksakawin S., Sukkaew A., Thongtawee S., and Junglok S.	Development of Eco-Friendly Clay Roof Tiles Enhanced with Coconut Coir Fibers and Fly Ash
18	15.14-15.21	FAT-018	**Riabsan P.**, Buaphat N., Kodae R., Ruangpradit N., Intarasiri S., Sukkaew A., Thongnon S., and Junglok S	Development of Grass Jelly Product Supplemented with Cucumber Enzymes to Enhance Fat Degradation Efficiency
19	15.21-15.28	FAT-019	**Suwannareak A.**, Siripanaporn J., Boonkliang S., Junglok S., Tison R., ThongChumroon S., and Sukkaew A	Study on the Efficacy of Mangosteen Peel Extract in Lightening Dark Lips and Enhancing Moisturization
	15.28-15.33	**Q & A Session**		

Room 5: Animal Production, Nutrition, and Industry

Moderator : Prof. Dr. Ir. Endang Sulistyowati., M.Sc.
Co-Moderator : Muhammad Dani, S.Pt., M.Sc.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	APN-003	**Heri Dwi Putranto**, Nurmeliasari, Muhammad Dani, Novitri Kurniati, Yossie Yumiati, and Zodi Setiawan	The Effects of Feeding Commercial Feed on Growth and Mortality of Balitbangtan-Bred Chicken During the Starter Phase
2	13.07-13.14	APN-004	**Endang Sulistyowati**, I Komang Gede Wiryawan, Irma Badarina, and Muhammad Abdulah Romdhoni	In Vitro Characteristics of Concentrate Containing Fermented *Arenga pinnata* by-product
3	13.14-13.21	APN-005	**Jarmuji**, Woki Bilyaro, and Jhon Firison	Effect of Sakura Block Enriched with Earthworm on Increasing Branched Fatty Acid and Populations of Bacteria in Palm Frond Rations
4	13.21-13.28	APN-006	**Dwatmadji**, Suteky T., Soetrisno E., Simanjuntak K., Anggita R.D. and Hidayat MR.	Black and White Pepper and Its Effect on Feed Digestibility and Efficiency on PE Goats
5	13.28-13.35	APN-007	**Tatik Suteky** and Dwatmadji	Effect of Herbs and Black or White Pepper on Fecal Characteristic and Lactic Acid Bacteria in PE Goat
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	APN-009	**Urip Santoso** and Heri Dwi Putranto	The Effect of *Sauropus androgynus* Leaves Powder on Feed Intake, Hematological and Blood Biochemical Status in Laying Kampung Chickens

No	Time	Abstract_ID	Authors	Topic
7	13.47-13.54	APN-018	**Yosi Fenita**, Deko Yaris Akbar, Urip Santoso, Desia Kaharuddin, and Nurmeiliasari	Inclusion of Moringa Leaf Extract (*Moringa oleifera* L) In Drinking Water on Broiler Fat Deposition
8	13.54-14.01	APN-001	**Mustofa Hilmi**, Bambang Ariyadi, Nanung Danar Dono, Zuprizal, and Ronny Martien	Silver nanoparticles: The impact of the synthesis duration when utilizing *Morinda citrifolia* Linn. leaf as a reductant on the morphology of particles
9	14.01-14.08	APN-002	**Dyanovita Al Kurnia**, Zuprizal, Nanung Danar Dono, Chusnul Hanim and Ronny Martien	Formulation and Characterization of Nano Emulsion Fingerroot (*Boesenbergia pandurata*) Essential Oil using D-Optimization Design for Feed Additive in Poultry
10	14.08-14.15	APN-008	**Winny Swastike**, lilik R.K, Bayu S.H, and Adi M.P.N	Food Safety of Cilok and Meatballs Sold Around Schools in Surakarta: Investigation of the Use of Borax and Formalin
	14.15-14.20	**Q & A Session**		
11	14.20-14.27	APN-010	**Amam**, Mochammad Wildan Jadmiko, Pradiptya Ayu Harsita, and Amir Sofwan Alwafa	Test the Production Performance of Broiler Chicken with Partnership System Based on Production Factors
12	14.27-14.34	APN-011	**Makmun**, Imam Mujahidin Fahmid, Muhammad Saleh S. Ali, Muhammad Yamin Saud, and Rahmadanih	Actor and Institution in Laying Hens Farming on Blitar Regency, East Java
13	14.34-14.41	APN-012	**Sabrina** and Firda Arlina	Performance of Male Bayang Ducks Reared at Different Altitude and Energy Levels

No	Time	Abstract_ID	Authors	Topic
14	14.41-14.48	APN-013	R Zahera, I G Permana, and **Despal**	Impact of Protected Fat Supplementation on Dairy Performance, Energy Balance, and Blood Metabolites in Early Lactation: A Meta-analysis
15	14.48-14.55	APN-014	**M N Farras**, Despal, and I G Permana	Macro Mineral Content of Selected Tropical Dairy Cow Feedstuffs as a Basis for Dietary Cation-Anion Difference Calculation
	14.45-15.00	**Q & A Session**		
16	15.00-15.07	APN-015	**Firda Arlina** and Sabrina	Enhancement Of Body Size in Male Bayang Ducks With Different Energy Levels And Raised At Different Altitudes
17	15.07-15.14	APN-016	**Woki Bilyaro**, Arif Rahman Azis, and Muhammad Dani	Increasing Meat Productivity and Quality of Indonesian Chickens by Genetic Quality Improvement
18	15.14-15.21	APN-017	**Nurmeiliasari**, Riesi Sriagtula, Yosi Fenita, Heri Dwi Putranto, and Jhon Firison	Dietary Effects on Rumen Morphometry and Blood Metabolites in Bali Cattle: A Study of Natural Grass and Palm Oil Sludge
19	15.21-15.28	APN-019	**Sri Arnita Abu Tani**, Fachroerrozi Hoesni, and Endri Musnandar	Indonesian Traditional Herbal Medicine to Enhance Body Weight Gain Recovery of Bali Cattle After Experiencing Long-Transportation Stress
	15.28-15.33	**Q & A Session**		

Room 6: Plant Protection and Pest Management

Moderator : Prof. Agustin Zarkani., S.P., M.Si., Ph.D.
Co-Moderator : Ariffachtur Fauzi, S.P., M.Si.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	PRT-002	**Agustin Zarkani**, Habib Al Ayubi Reonaldi, and Dwinardi Apriyanto	Mealybugs (Hemiptera: *Pseudococcidae*) complex of Durian Fruits (Durio zibethinus Murr.) in Indonesia
2	13.07-13.14	PRT-010	**Yenny Sariasih**, Siti Subandiyah, Sri Widyaningsih, Tahir Khurshid, Jianhua Mo, and Nerida Donovan	Response of citrus rootstocks against inoculation of arbuscular mycorrhizal fungi (AMF) and *Candidatus liberibacter* asiaticus
3	13.14-13.21	PRT-012	**Sempurna Ginting**, and Desi Rahma	The Effect of Media composition on The Growth of Entomopathogenic Fungi (FARLOW) SAMSON
4	13.21-13.28	PRT-013	**Tunjung Pamekas**, Hendri Bustaman, dan Zomi Tubesa	Correlation Between Rust Disease Severity Structural and Biochemical Resistance of Five Maize Varieties
5	13.28-13.35	PRT-015	**Mimi Sutrawati**, Hendri Bustamam, Sempurna Ginting, Rustikawati, Rahma Mutia, Ratna Nabila Pradita, Ella Mustika	Virus Detection on Melon Plants
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	PRT-001	Dedi Hutapea, **Rudi Cahyo Wicaksono**, Mizu Istianto, Otto Endarto, Unun Triasih, and Susi Wuryantini	Observation of *Bactrocera dorsalis* (Diptera: *Tephritidae*) Infestation on Large Chili, Cayenne Pepper and Curly Chili Plants in Malang

No	Time	Abstract_ID	Authors	Topic
7	13.47-13.54	PRT-003	**Lily F. Ishaq**, Anthonius S.J. Adu Tae, and W.I.I. Mella	Exploration of Arbuscular Mycorrhizal Fungi in the Rhizosphere of Shrub *Chromolaena odorata* in Nusa Tenggara Timur, Indonesia
8	13.54-14.01	PRT-004	**Jajuk Aneka Beti**, Arif Susila, Sudarto Sudarto, Yulis Hindarwati, Intan Gilang Cempaka, Budi Winarto, Sodik Jauhari, Agus Supriyo, and Joko Pramono	Effect of Seed Origin and Varieties of Chrysanthemum Multiflorum on Resistance to Rust Disease
9	14.01-14.08	PRT-005	Muhammad Choirul Amri, **Nadzirum Mubin**, and Idham Sakti Harahap	Termites (Blattodea: *Termitidae*) in the sawmill area in Sukoharjo Regency, Central Java
10	14.08-14.15	PRT-006	**Sukartini**, Agus Sutanto, I Gusti Komang Dana Arsana, Irma Calista, and Miswarti	Types of cultivated bananas infected by BBTV and the spread of BBTV in Bengkulu
	14.15-14.20	**Q & A Session**		
11	14.20-14.27	PRT-007	**Nurbailis**, Zurai Resti, and Afifah Fauziah	Potential of Endophytic Bacterial Consortia to Inhibit the Growth of Helminthosporium Oryzae Breda de Haan Caused Brown Spot Disease in Rice
12	14.27-14.34	PRT-008	Sari Rahayu, **Trizelia**, and Munzir Busniah	Virulence of The Entomopathogenic Fungus Metarhizium anisopliae Against Eggs of *Crocidolomia pavonana* Fabricus (Lepidoptera: *Crambidae*)

No	Time	Abstract_ID	Authors	Topic
13	14.34-14.41	PRT-009	Diding Rachmawati, **Unun Triasih**, Mizu Istianto, and Rudi Cahyo W	Potential of the Biological Agent *Trichoderma koningii* Against Colletotrichum capsici Causes Anthracnose Disease in Large Chili Plants (*Capsicum annuum* L.) In Vitro
14	14.41-14.48	PRT-011	**Indarwanto**, Yuwana, Atra Romeida, and Gunggung Senoaji	Effectiveness the implementation of Musi Rawas Regency Regional Regulation Number 3 of 2018 concerning Sustainable Food and Agricultural Land Protection
15	14.48-14.55	PRT-014	**Deri Gustian** and Mimi sutrawati	Betasatellites Alter the Begomovirus Infection in Tomato and Oriental melon
16	14.55-15.02	PRT-016	**Nicho Nurdebyandaru**, Sawithree Pramoj Na Ayudhya, Tadanori Aimi, and Norihiro Shomomura	*Rhizopogon roseolus* mushroom-associated bacteria enhance mycorrhizal symbiosis and *Pinus thunbergii* plant health
17	15.02-15.09	PRT-017	**Rudi Cahyo Wicaksono**, Bambang Tri Raharjo, Akhmad Rizali, Aminudin Afandi, Mizu Istianto	Diversity and Infestation Patterns of Fruit Flies (Diptera: *Tephritidae*) on Chili Plants (*Capsicum* Sp) in East Java Indonesia
	15.09-15.15	**Q & A Session**		

Room 7: Land Resources Management

Moderator : Dr. Ir. M. Faiz Bachia, M.Sc.
Co-Moderator : Elsa Lolita Putri, S.P., M.P.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	LRM-001	Vrazenevia Sinensis, Yurike, Bieng Brata, Indra Cahyadinata, and **Muhammad Faiz Barchia**	Indices and Strategies for Irrigated Paddy Cultivation Sustainability in Selagan Raya Sub-district, Bengkulu
2	13.07-13.14	LRM-002	**Yudhi Harini Bertham**, Kartika Utami, Elsa Lolita Putri, and Zainal Arifin	Strategy of Application Biofertilizer for Navigating Climate Change on Soybean Plant in Coastal Area
3	13.14-13.21	LRM-003	**Riwandi**, Kartika Utami, Hasanudin, and Herry Gusmara	Combination of Type and Dose Level of Organic Fertilizer on Improvement of Soil Health
4	13.21-13.28	LRM-006	**Sukisno** and Wahyudi Arianto	The Status of Microelements Cu, Pb, Zn, and Cd in the Soil with Land Application of Palm Oil Mill Effluents in the District of Tanjung Kemuning, Kaur Regency, Province of Bengkulu
5	13.28-13.35	LRM-008	**Maulana Insanul Kamil**, Khairunnisa Kamarudin, Irwin Mirza Umami, and Susumu Shin Abe	Impact of Land Use and Management on Soil Fertility in Tropical Volcanic Ash Soils of Bengkulu
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	LRM-009	**Kartika Utami**, Anandyawati, and Evelyne Riandini	The Annual Coastal Flood and Fertility of Coastal Paddy Soil in Bengkulu

No	Time	Abstract_ID	Authors	Topic
7	13.47-13.54	LRM-010	Hilma Bi'iznih, Bambang Sulistyo, Sukisno, Muhammad Faiz Barchia, **Elsa Lolita Putri**, and Kartika Utami	Agricultural Land Use Changes Analysis in South Seluma Sub-district Bengkulu using Geo-graphical Information System
8	13.54-14.01	LRM-004	**Ummi Jayanti**, Marulak Simarmata, Atra Romaeda, Budi Kurniawan, Bieng Brata, Faiz Barchia, and Wied Wiwoho Winaktoe	Dynamic System Application for Solutions to Sustainability Problems Resulting from the Use of Mercury in Small-Scale Gold Processing in Suka Menang Village, Muratara District, South Sumatra Province
9	14.01-14.08	LRM-005	**Zainal Arifin**, Yudhi Harini Bertham, Wiryono, Agus Martono H. Putranto, Atra Romaeda, and Guswarni Anwar	Analysis of Carbon Stock in Post-Coal Mining Land Reclamation at PT Inti Bara Perdana, Central Bengkulu Regency, Bengkulu Province
10	14.08-14.15	LRM-007	**Fadilah**, Marulak Simarmata, and Muchammad Farid, and Sukisno	Estimation of Sustained Groundwater Resource Potential by Analyzing Aquifer Depth Lithology in Selebar Subdistrict, Bengkulu
11	14.15-14.22	LRM-011	**Neli Definiati**, Zainal Muktamar, Nanik Setyowati, Nurmeiliasari	Exploring the Cellulolytic, Potassium Solubilizing, and Phosphor Solubilizing Potentials of Bacteria and Their Capabilities in Degrading Cellulose, Solubilising Phosphorus, and Potassium
	14.22-14.27	**Q & A Session**		

Room 8: Coastal, Fisheries, and Marine Management

Moderator : An Nisa Nurul Suci, S.Si., M.Si.
Co-Moderator : Nur Lina Maratana Nabiu, S.Pi., M.Si.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	FSM-004	**Firdha Iresta Wardani**, An Nisa Nurul Suci, and Nella Tri Agustini	Water Quality and Plankton For Freshwater Eels (*Anguilla bicolor*) in Jenggalu River, Bengkulu Province, Indonesia
2	13.07-13.14	FSM-005	**Ana Ariasari**, An Nisa Nurul Suci, Ali Muqsit, Nur Lina Maratana Nabiu, Akbar Abdurrahman Mahfudz, Santoso Budi Widiarto, Anhar Muslim, and Muamar Mujab	Length-Weight Relationship of Three Shark Species of Carcharhinidae in the Northern Coast of Jakarta
3	13.14-13.21	FSM-006	**Ali Muqsit**, Akbar Abdurrahman Mahfudz, Ana Ariasari, Nur Lina Maratana Nabiu, An Nisa Nurul Suci, Zamdial, Alfiqi Maulana	Analysis of Growth and Exploitation Yellowfin tuna in Kaur Regency, Bengkulu Province
4	13.21-13.28	FSM-007	**Yar Johan**, Mukti Dono Wilopo, Yenni Putri Sari, and Syafiq M. Musa	Microplastic Intensity Profile in Sediment Cores from Two Mangrove Forests in Enggano Island, Northern Bengkulu
	13.28-13.33	**Q & A Session**		
5	13.33-13.40	FSM-001	**Misdawita**, Putri Asrina, M. Rizwan, Dahlan Tampubolon, Sri Endang Kornita, and Bunga Chintia Utami	The Impact of Implementing The Blue Economy and Green Concept for Improving The Welfare of Coastal Areas in The Meranti Islands

No	Time	Abstract_ID	Authors	Topic
6	13.40-13.47	FSM-002	**Zulfia Memi Mayasari**, RR. Yudhi Harini Bertham, Mukhammad Farid, and Arif Ismul Hadi	Identification of the Level of Social Vulnerability for the Tsunami Disaster in the Coastal Area of Bengkulu City
7	13.47-13.54	FSM-003	**Akbar Abdurrahman Mahfudz**, Ana Ariasari, Ali Muqsit, Nur Lina Maratana Nabiu, and An Nisa Nurul Suci	Implementation of Economic Mathematics Using Klassen Typology Analysis for Identification of The Development Level of Islands (Case Study: Karimun Regency)
8	13.54-14.01	FSM-008	Cheng-En Hsieh, **Person Pesona Renta**, Yi-Cheng Huang, Yi-Min Chen.	Algal-Bacterial Synergy: Elucidating the Antibacterial Potential of *Picochlorum* sp. Strain S1b and Its Associated Microbiome
	14.01-14.06	**Q & A Session**		

Room 9:

Forestry & Biodiversity; Medicinal Plant & Herbal Medicine

Moderator : Prof. Ir. Ridwan Yahya, M.Sc., Ph.D.
Co-Moderator : Hefri Oktoyoki, S.Hut., M.Si.

No	Time	Abstract_ID	Authors	Topic
1	13.00-13.07	FST-001	**Wiryono**, Ahmad Ilham Ramadhan, M. Faiz Barchia, Ali Munawar, Agus Susatya, Hery Suhartoyo, and Steffanie Nurliana	Soil Chemical and Physical Properties of Reforested Mined Land at Different Ages after reclamation
2	13.07-13.14	FST-002	**Hefri Oktoyoki**, Ferdinand Salomo Leuwol, Amjad Salong, Mohammad Amin Lasaiba, and Paisal Ansiska	Dynamics of Social Forestry Business Groups and Strategies for Strengthening Forestry Business Assistance
3	13.14-13.21	FST-003	**Delvian**, Deni Elfiati, and Dwi Fitriani	Diversity of Arbuscular Mycorrhizal Fungi in The Rhizosphere of Rubber and Oil Palm in Several Location
4	13.21-13.28	FST-004	**Edi Suharto**, M. Fajrin Hidayat, Zen Prahdana	Morphometry of Tes Lake in Bengkulu Indonesia
5	13.28-13.35	FST-005	**Guswarni Anwar**, Irma Suryani Ambarita, and Risky Hadi Wibowo	Diversity and Distribution of Ectomycorrhizal Fungi in The University of Bengkulu Arboretum
	13.35-13.40	**Q & A Session**		
6	13.40-13.47	MPH-001	Salsabilla Azahra, **Debie Rizqoh**, Enny Nugraheni, Utari Hartati Suryani, Sipriyadi, and Ellen Maidia Djatmiko	Isolation and Screening of Inhibitory Power of Mangrove Endophytic Bacteria *Sonneratia alba* from Baai Island, Bengkulu Against Candida albicans

No	Time	Abstract_ID	Authors	Topic
7	13.47-13.54	MPH-002	**Gustina Dwi Wulandari**, Risky Hadi Wibowo, Sipriyadi, Ira Handayani, and Redo Setiawan	Identification of Endophytic Bacteria Producing Red Pigment Isolated from the Holoparasitic Plant *Rafflesia arnoldi* R.Br from Bengkulu Province
8	13.54-14.01	MPH-003	**Liya Agustin Umar**, Reza Fairuz Sikumbang, Sarah Nurrachmah Daniel, Oktoviani, Dodi Hendra, Debie Rizqoh, Novriantika Lestari, and Hilda Taurina	Effect of Kebiul Seed Extract (*Caesalpinia bonduc* L.) on the Estrus Cycle of Mice (*Mus musculus* L.)
	14.01-14.06	**Q & A Session**		

SCOPE 1
CROP PRODUCTION AND BREEDING

CPB-001

Variability, Heritability and Genetic Advance of Chilli Pepper Agronomic Characters in Histisols

Dwi Wahyuni Ganefianti[1]*, Herry Gusmara[2], and Muhammad Ervan Nurhames[1]

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Abstract

Peat soils (Histisol) can be used to grow plants such as chili peppers. However, not all chile varieties grow well on peat soils. As a result, a series of investigations are required to develop chili cultivars suitable for peat soils. Collection is the initial phase in a plant breeding effort that produces new kinds. Genetic diversity, heritability, and genetic advancement all play essential roles in selection efficiency. The purpose of this study is to determine the variability, heritability prediction value, and genetic advancement of agronomic features in 14 chili genotypes grown on peat soils. This study was conducted between June and October 2022 on the Faculty of Agriculture's Integrated Agricultural Zone property at the University of Bengkulu. This study employed a randomized fully block design (RCBD) with a single component containing 14 chili genotypes. Each treatment was performed three times, totaling 42 experimental units. Each experimental unit comprised 20 plants, with 5 serving as sample plants. The study's findings show that the number of branches, dichotomous height, leaf breadth, and fruit length are the chili traits with the most genetic variability. Plant height, canopy width, blooming time, number of stomata, number of trichomes, number of fruit per plant, and fruit weight per plant all had narrow fluctuation values. The number of branches, dichotomous height, leaf width, and fruit length all shown high heredity predictive values. Chilies can be selected based on traits with high genetic diversity and heritability.

Keyword: Genotype, Peat land, Selection

CPB-002

Screening of Inbred Rice Line from Crossing Local Varieties for Drought Stress Tolerance using Polyethyleneglycol at Seedling Stage

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Abstract

Breeding drought-tolerant rice by utilizing local varieties is expected to increase the superiority of varieties cultivated in specific locations. The first thing to do is preliminary screening in the laboratory to find lines that are tolerant of drought stress. The application of polyethylglycol (PEG) into the growing medium is expected to create stress conditions because the availability of water for plants is reduced. This study aims to screen inbred rice lines resulting from crosses of local varieties for drought stress tolerance using polyethylglycol in the seedling stage. The materials used were 19 inbred rice lines and Salumpikit and IR20 as tolerant and sensitive check varieties, respectively. The experiment consisted of two stages, namely drought stress experiment with 20% PEG 6000 (0.58 MPa) in the germination phase and nutrient solution. The results showed that drought stress using PEG inhibited the growth of roots, shoots, and shoot-root ratio at the germination and at the seedling stage. Significant differences were found in the sensitive variety IR20 in all variables observed. This study also showed that the Salumpikit variety as a tolerant variety had a high level of tolerance in all variables, while the tested lines had varying relative root lengths.

Keyword: Drought stress, Polyethylene glycol, Local varieties, Rice lines

CPB-003

Enhancing Sorgum (*Sorghum bicolor*) Productivity Using Soil Amelioration in Ultisols

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Abstract

Food is essential to life. As the population grows, the demand for food increases consequently. However, the conversion of fertile agricultural land to other uses makes land for food crops scarcer. Agricultural expansion often utilizes marginal lands, including Ultisols, which are acidic and contain low level of essential nutrients for plant growth, such as nitrogen, phosphorus, and potassium. Therefore, it is crucial to use environmentally tolerant crops like sorghum and enhance soil fertility with amendments like zeolite and bio-slurry organic fertilizer. This study aimed to determine the optimum concentration of bio-slurry in conjunction with zeolite to promote sorghum growth and yield in Ultisols. Conducted from February to June 2016 in Kandang Limun Village, Muara Bangkahulu District, Bengkulu City, Indonesia, the research employed a Completely Randomized Design (CRD) with 2 factors and three replications. The first factor was the dosage of bio-slurry fertilizer at six levels: 0 tons/ha, 4 tons/ha, 8 tons/ha, 12 tons/ha, 16 tons/ha, and 20 tons/ha (absolute dry weight). The second factor was the zeolite dosage at three levels: 0 tons/ha, 3 tons/ha, and 6 tons/ha. The study found a combined effect of bio-slurry and zeolite on panicle length and the number of leaves. Bio-slurry at a dose of 13.2 tons/ha without zeolite produced the most leaves (15), while the combination of 13.2 tons/ha of bio-slurry and 3 tons/ha of zeolite resulted in the longest panicle length (20.6 cm). Bio-slurry treatment at a dose of 15.88 tons/ha yielded the highest shoot dry weight of sorghum. The highest leaf area, dry weight of seeds per panicle, and dry weight of 100 seeds were observed at doses of 15.87 tons/ha, 18.26 tons/ha, and 15.29 tons/ha, respectively. The application of bio-slurry and zeolite shows promise for improving the productivity of sorghum cultivated in Ultisols.

Keyword: Bio-slurry, Sorghum, Ultisols, Sorghum bicolor, Soil amelioration, Zeolite

CPB-004

Growth Performance of 10 Accessions of Local Food Taro Plants Against Different Levels of Waterlogging from Coastal Areas of Bengkulu Province

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Abstract

Taro (*Colocasia esculenta* L. Schoot) is a plant that has various benefits, especially the high carbohydrate content in taro tubers, so it has the potential as an alternative food ingredient and has high economic value.The aim of this research was to see the growth performance of 10 accessions of local food taro at different levels of waterlogging. The research was carried out in August-December 2023in the Kampung Kelawi Village Experimental Garden, Sungai Serut District, Bengkulu City with a height of ± 10 meters above sea level. This research carried out planting of local food taro plants in planting media that was treated with water levels that were different from the planting material from which local food taro plant shoots came from in the field. The research used a two-factor Complete Randomized Block Design with the first factor being 10 accessions of local food taro, the second factor namely different levels of waterlogging consisting of G0: No Flooding, G1: Waterlogging Height 15 cm and G2: Waterlogging Height 25 cm. Different accession treatments and levels of waterlogging had a significant effect on the variables of plant height, leaf width and leaf length.From the results of research on cultivating local food taro plants with different water pool heights, it was obtained that the highest local food taro plant heights were Accession 3 which came from Bentiring Village and Accession 8 from Marga Mulia Village with the best water pool height, namely 15 cm water pool height seen from parameters of plant height, leaf length and leaf width.

Keyword: Accession, High water level, Local food taro

CPB-005

Optimal Combination of Inorganic Nitrogen Fertilizer and Vermicompost for the Growth and Yield of Sweet Corn in Ultisols

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Abstract

Growing environmental concerns have led to increased use of organic amendments like vermicompost (VC). This study aims to determine the optimal combination of urea and VC for sweet corn growth and yield in Ultisols. Conducted from December 2019 to February 2020 at the Bengkulu University research field in Indonesia, a Randomized Complete Block Design was employed with five treatments: 300 kg ha^{-1} urea (control), 225 kg ha^{-1} urea + 2.5 tons ha^{-1} VC, 150 kg ha^{-1} urea + 5 tons ha^{-1} VC, 75 kg ha^{-1} urea + 7.5 tons ha^{-1} VC, and 10 tons ha^{-1} VC. Each treatment was replicated three times. Significant effects on various growth and yield parameters (plant height, leaf greenness, ear length without husk, ear diameter, number of seed rows per ear, ear weight without husk per plant, ear weight per plot, and corn sweetness level) were observed. The combination of 150 kg ha^{-1} urea + 5 tons ha^{-1} VC was as effective as 300 kg ha^{-1} urea alone, while 225 kg ha^{-1} urea + 2.5 tons ha^{-1} VC achieved the highest sweetness level (10.6 Brix). Post-harvest soil acidity decreased significantly with increased VC use, from 4.2 to 5.1. Total nitrogen (N), available phosphorus (P), and exchangeable potassium (K) levels significantly increased with higher VC levels, reaching optimal values at the highest rate of 7.5 tons ha^{-1}. This dual fertilizer approach is the most efficient method for sustainable sweet corn production, reducing urea doses by 50%-75% compared to individual applications.

Keyword: Balanced fertilization, Inorganic fertilizer, Integrated nutrient management, Soil conditioner

CPB-006

Cultivation of Peanuts (*Arachis hypogaea* L.) in Ultisol of Coastal Area Using Ameliorants of Poultries' manure and Mycorrhiza

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Abstract

The yield of peanuts or ground nuts in ultisol can be achieved by using ameliorants such as poultries' manure and mycorrhiza. The aim of this study was to find the effects of the combination of poultries' manure and mycorrhiza on the growth and yield of peanuts in the ultisol of the coastal region. The research was conducted in the Integrated Research Field of the Faculty of Agriculture of Bengkulu University from January to April 2024. Two factors of the the research were arranged in a randomized completely block design (RCBD) with three repetitions. The first factor was the doses of poultries' manure, which were 10, 20, and 30 tons/ha, and the second factor was the three doses of mycorrhiza, which were 0, 5 and 10 g/plant. The results showed a significant interaction between the dose of poultries' manure and mycorrhiza to the yield of peanuts, including the weight and the number of peanut pods per plant, but no influences of the dosage of poultries' manure or mycorrhiza were observed on the height of the plant, the number of flowers, the greenness level of leaf, the weight of 100 seeds, and the number of root nodules. There was no difference in the weight and the number of peanut pods per plant in the three doses of poultries' manure combined with mycorrhiza up to 5 g/plant, but with a combination of mycorrhiza 10 g/plant, the peanuts' yield increased very significantly on the treatment of poultries' manure of 20 tons per hectare. The novelty of this study is that mycorrhiza is essential to obtaining optimal benefits of poultries' manure on peanut cultivation in the ultisol of the coastal areas.

Keyword: Coastal area, Mycorrhiza, Peanuts, Poultries' manure, Ultisol

CPB-007

Potato Production with Various Types and Dosage of Organic Fertilizers

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Abstract

The waste of dairy cow manure in the Pangalengan dairy cow center, West Java is quite a lot, but it is not utilized because farmers do not have time to process it as organic fertilizer, so farmers use more chicken manure that is ready to use and more available in the market. The purpose of this research was to get the best type and dosage of organic fertilizer to increase potato production. The study was conducted from November 2014 to February 2015 in Pangalengan Village, Pangalengan District, West Java. The study used a two-factor randomized block design and three replications. The first factor was the type of organic fertilizer consisting of cow manure, chicken manure, vermicompost, cow manure: chicken manure (v/v: 1/1), wet biogas waste, and dry biogas waste. The second factor was the dosage of organic fertilizer which was 10 and 15 t / ha. Each treatment of organic fertilizer types was analyzed for acidity level, moisture content, organic C, total N, and P and K. Soil before the experiment was analyzed by macro and micronutrient content, acidity level, and soil texture. Plant variables observed were plant height, number of large tubers, number of medium tubers, total number of tubers, tuber weight per plant, and weight per tuber. Data were analyzed by F test and if there were significant differences, further tests were carried out with DMRT test of 5% level. The results showed that there was no interaction between types and dosage of organic fertilizer on all observational variables. The treatment of dry biogas waste has the highest number of medium tubers, number of larger tubers, weight per plant, and weight per tuber, because of its lowest CN ratio content of 12 and its lowest water content of 14.9%. The treatment of 15 ton/ha organic fertilizer has higher several large tubers 20% than of 10 t / ha.

Keyword: Dosage, organic, fertilizer, Potato

CPB-008

Effect of Slip and Accession on Drought Tolerance of Pineapple Seedlings Through Proline Level

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Abstract

Pineapple plants are propagated vegetatively by using slips. This research was conducted in the Experimental Garden of Sukamerindu Village, Sungai Serut Subdistrict, Bengkulu City with the aim of determining effect of slip and accession on drought tolerance of pineapple seedlings through proline level. This study used a Completely Randomized Design with two treatments, namely the weight slip (B1 and B2) and accessions (A1-A25) with 50 treatment combinations and repeated three times so that a total of 150 plants were obtained. The results showed that there was no interaction between weight of slip and accession on growth of seedlings. Accession significantly affects the plant height and number of leaves but does not significantly affect the leaf greenness and stomatal density. Weight of slip has a very significant effect on the plant height and number of leaves but has no significant effect on the leaf greenness and stomatal density. The highest proline content was found in Accession Babat-1 at 0.541 µmol proline/gram, while the lowest proline content was found in Accession Alai-14 at 0.345 µmol proline/gram. The highest proline content in Accession Babat-1 is thought to be more resistant to drought stress than accession Accession Alai-14.

Keyword: Accession, Drought, Lip, Proline, Pineapple

CPB-009

Characterization of Morphological Changes in Shallots (*Allium cepa* var. *Aggregatum*) in Response to Gamma Ray Irradiation Treatment

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Abstract

Shallots are an essential agricultural commodity in Indonesia. The demand for shallots continues to increase, so it is necessary to increase the productivity and quality of shallots. Genetic diversity in shallot plants is important in producing new varieties with superior characteristics. This research aimed to determine the growth and yield of shallots as a response to mutagen treatment with gamma-ray irradiation. The research material was TSS seeds (true shallot seeds) treated with gamma-ray irradiation at doses of 0, 25, 50, 75, 100, 125, 150 and 175 Gy. The irradiation process is carried out using a 220 gamma cell machine which uses a Cobalt-60 energy source. The research was carried out using a Completely Randomized Design (CRD) with a single factor, namely gamma-ray irradiation treatment. Each treatment consisted of 100 plants, which were carried out in 3 replications. The results of this study show that administering a dose of gamma-ray irradiation prolongs the life of germination compared to treatment without irradiation. Increasing the irradiation dose to 175 Gy reduced all observed variables, at a dose of 175 Gy it had the lowest sprout percentage of 3%. Irradiation treatment with a dose of 125 Gy (D5) had the best results on plant height parameters, namely 59.5 cm, and harvest dry weight, namely 40.4 g/plant, while a dose of 75 Gy (D3) had the best results on tuber number parameters, at about 4.1 tubers/plant.

Keyword: Cobalt-60 energy, Irradiation, Mutation breeding, True shallot seeds

CPB-010

Evaluation of Soybean Varieties for Salinity Tolerance

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Abstract

The main problem with coastal land dominated by Entisol soil for crop production is the high salt level stress or salinity. Soybean cultivation on coastal land can be developed by using superior varieties that are tolerant to high salinity. The research aimed to test the resistance of six soybean varieties to salinity stress. A pot experiment in greenhouse was conducted to grow six soybean varieties, namely: Detam 1, Detam 2, Detam 3, Anjasmoro, Grobogan, and Gepak Kuning with four levels of salinity stress using NaCl concentrations of 0, 1000, 2000, and 3000 ppm. NaCl solutions were applied weekly until generative stage and irrigated each two days with plain water. The research results showed that salinity stress up to 3000 ppm did not have a significant effect on the growth and yield of 6 soybean varieties. The variety with the best yield and seed weight was Anjasmoro with seed yield of 15.05 g per plant and 24.01 g per 100 seeds weight.

Keyword: Coastal Land, Entisol, Black Soybean, NaCl concentration, Supersior Variety

CPB-011

Correlation of Agronomic Traits to Yield of Upland Rice Lines in Ultisol Soil, Belitung Regency

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Abstract

Lodging on rice plants was one of the causes of decreased rice plant production. Developing superior local varieties through crossing was one of the solutions to solve the decrease in the production of rice plants. This research aims to know and determine the potential of F8 lines of lodging varieties of upland rice. This research was conducted using an experimental method. The design used a randomized block design with 10 treatments (5 F8 lines and 5 comparison varieties). The F8 lines used G1, G2, G3, G4, and G5. The comparison varieties used Danau Gaung, Inpago 8, Inpago 12, Rindang, and PBM UBB 1. The research data were analyzed using Duncan Multiple Range Test (DMRT), correlation test, and pathway analysis. The result showed that F8 lines of upland rice had a potential yield of 2.350 tons/ha to 3.395 tons/ha in the dry land of Belitung. The correlated characters were the weight per plot and the flag leaf length in the pathway analysis. White rice of upland rice lines had the highest yield potential in the dry land of Belitung was G4 in the amount of 6.79 kg/plot, and the yield potential of red rice lines was G5 in the amount of 6.72 kg/Plot.

Keyword: Belitung, Lines, Lodging Resistance, Pathway Analisys, Upland Rice

CPB-012

Effect of NPK Fertilizer and Dolomite on Growth and Yield of Purple Eggplant (*Solanum melongena* L.) in Ultisols

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Abstract

Eggplant is a very popular vegetable fruit to many people since it is nutritious and benefits for human health. Growing purple eggplant can be practiced in Ultisols, but the use of this type of land must be amended with the proper doses of NPK fertilizer and dolomite. This research aimed to determine the effect of NPK and dolomite the dosage of dolomite on growth and yield of purple eggplant. A field experiment was arranged in a Complete Randomized Block Design with consisting of two factors. The first factor was the doses of NPK (0, 200, 400 and 600 kg ha^{-1}), while the second factor was dolomite doses (0, 0.5, 1.0, and 1,5 exchangeable Aluminum). Results indicated that the use of NPK fertilizer increased plant height, leaf numbers, fruit diameter, leaf greenness, fruit weight, fruit numbers $plant^{-1}$, fruit weight $plant^{-1}$, fruit weight $plot^{-1}$, and yield ha^{-1}. However, dolomite has insignificant effect on growth and yield of purple eggplants. Fertilizing with 600 kg ha^{-1} of NPK provided the best growth and yield of purple eggplant.

Keyword: Dolomite, NPK fertilizer, Purple Eggplant, Ultisols

CPB-013

Effect of Apokol Location and KNO3 Application on Physiological Characters, Viability and Growth of Aren (*Arenga pinnata* Merr) Seeds

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Abstract

Sugar palm plant is potential plant because almost all parts of the aren palm tree are useful and can be used for various needs, starting from the roots, stems, leaves, palm fiber and its products (nira, starch or flour, and fruit). Dormancy in sugar palm plants is one of the factors causing problems in the provision of sugar palm seeds. Efforts made in the problem of dormancy of sugar palm plants are by chemical scarification by giving KNO3, apokol marker factors are also used as a determination of the quality of sugar palm seedlings. In this experiment, Factorial Randomized Group Design (RAK) with 2 factors and 3 replications will be used. The first factor (P) is the location of the apokol based on the quadrant division consisting of 4 levels such as, P1 = Quadrant 1 (0-90) degrees, P2 = Quadrant 2 (90-180) degrees, P3 = Quadrant 3 (180-270) degrees and P4 = Quadrant 4 (270-360) degrees. The second factor (K) is the concentration of KNO3 which consists of 3 levels. The treatment given to the K factor is 3 levels of KNO3 concentration, namely, K1 = concentration of 0.5%, K2 = concentration of 1%, K3 = concentration of 1.5% From these treatments. The results showed that the percentage of germination reached 80 % treatment with KNO3 concentration 1.5 %, so that it can be concluded if the germination using KN03 has a real effect.

Keyword: Aren seedlings, KN03, Apokol position

CPB-014

Superiority Test of 'Hilosia' Dragon Fruit Variety Candidate

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Abstract

Various types of dragon fruit have been developed in Indonesia. To obtain the candidate of new superior varieties, selection need to be carried out. The aim of the research was to test the superiority of candidate of dragon fruit variety. The superiority test was carried out from January 2017 until December 2018 at IP2TP Aripan, Indonesian Tropical Fruit Research Institute. The plant samples were 24 poles (96 plants). Observations were made on stem, thorn, flower and fruit. Qualitative and quantitative character observations were carried out using the UPOV description guide (2011) and several modifications. Data were analyzed descriptively. 'Hilosia' dragon fruit variety candidate have the advantage of large fruit weight (400-930 g), without the help of pollination and high production per hectare per year, namely 43.90-45.60 tons. 'Hilosia' dragon fruit variety candidate has special characteristics, namely an elliptical fruit shape with one side more curved, the color of the petals is light green (Yellow Green Group 144 C), the color of the stigma is yellowish green (Yellow Green Group 154 C) and the position of the stamens to the pistil is the same height. Hilosia dragon fruit has been registered as a new variety by Minister of Agriculture Decree No. 257/Kpts/SR. 130/D/III/2021.

Keyword: Dragon fruit, Superiority test, New superior variety

CPB-015

A Study on Improving Tomato Shelf Life Through Backcrossing Selection and Correlation Analysis of Sletr1-2 Allele

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Abstract

Tomatoes are a valuable crop with numerous nutritional benefits. However, their ripening process often leads to significant postharvest losses. Breeding techniques have been developed to address this issue by incorporating mutant genes, such as SIETR1, which delay maturity and inhibit ethylene's action. However, these methods can also have undesirable side effects. Enhancing traits can be accomplished by establishing backcross populations, using molecular and phenotypic selection methods, and investigating the interrelationship between critical attributes. The present study created backcross populations from a mutant hybrid with the Sletr1-2 allele, using 'Intan' as the recurrent parent. Three selection phases were carried out: plant growth, the presence of the Sletr1-2 allele using CAPs marker, and fruit shelf life of over 20 days. The results of the correlation analysis indicated weak yet significant positive correlations between shelf life and the number of fruits per cluster and fruit set. Selecting a longer shelf life can increase the number of fruits per cluster and enhance the fruit setting percentage while promoting earlier flowering and harvesting. The use of molecular and morphological selection methods proved effective in incorporating the long shelf-life trait into the genetic makeup of the high-performing backcrossing population of tomatoes while preserving or improving other essential agronomic traits. The selection of extended shelf life in tomatoes can simultaneously improve other critical agronomic characteristics, enabling the development of more comprehensive, high-yielding varieties.

Keyword: Backcross, CAPs markers, Correlation analysis, Selection, Shelf life

CPB-016

Growth and Yield of Pakchoi Plant in Various Combination of Market Waste Liquid Organic Fertilizer Doses and Compound NPK Fertilizer

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Abstract

Pakchoi (*Brassica rapa* L.) is usually used as a soup ingredient or food garnish. Along with the increasing population in Indonesia, the demand for vegetable commodities in Indonesia is also increasing. The way it can be used to increase pakcoy production can be done by fertilizing either inorganic fertilizers or organic fertilizers. The continuous application of compound NPK fertilizers damages the environment so a replacement is needed by using market waste liquid organic fertilizer (LOF). LOF can improve the physical, chemical, and biological agents of soil due to market waste liquid organic fertilizer can supply other nutrients and can increase the growth and yield of pak choi. This study objected to determining the combination of liquid organic fertilizer doses and compound NPK fertilizer to produces the highest growth and yield of pak choi plants.This research was conducted from January to March 2024 at the UNIB experimental field, Beringin Raya, Muara Bangkahulu District, Bengkulu City. The study used a completely randomized design (CRD) with a single factor, namely the application of market waste liquid organic fertilizer (LOF) and compound NPK fertilizer consisting of: (P0) 100% dose of LOF of Nasa (control), (P1) 100% dose of compound NPK fertilizer, (P2) 75% dose of compound NPK fertilizer + 25% LOF, (P3) 50% dose of compound NPK fertilizer + 50% LOF, (P4) 25% of compound NPK fertilizer + 75% LOF, (P5) 100% of LOF. The results showed that the treatment combination of 25% dose of compound NPK fertilizer + 75% LOF produced the highest growth and yield in pak choi plants seen from the parameters of plant height at 4 WAMP, leaf area, plant fresh weight, crown weight, crown dry weight, and root dry weight.

Keyword: Fertilizer, Liquid fertilizer, Pakchoi

CPB-017

Opportunities and Challenges for the Development of West Nusa Tenggara Province as a Garlic Seed Production Center in Indonesia

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Abstract

The demand for garlic in Indonesia is currently estimated at 500,000 tons per year, but domestic production only meets 17.5% of this demand, which is around 82,000 tons. One of the main challenges in developing garlic production is the limited availability of quality seeds. West Nusa Tenggara (NTB) Province, one of the largest garlic-producing regions in Indonesia, has the potential to become a national garlic seed center. This paper aims to explore the opportunities and challenges of developing garlic seeds in NTB Province as the national garlic seed center. Data was collected through in-depth interviews with stakeholders and a desk study and then analyzed descriptively. NTB Province has the potential to become a national garlic seed center due to its extensive highlands in Sembalun, Lombok Island, and Sambori, Sumbawa Island. Additionally, there are a significant number of garlic seed producers willing to provide garlic seeds for national needs if the government shows seriousness and focus in achieving self-sufficiency. Challenges in the field include farmers preferring to sell their fresh garlic to the market, resulting in a shortage of seed stock. Furthermore, pink root and white rot diseases have emerged and are spreading, especially in Sembalun highlands, reducing both yield quantity and quality. These two diseases are difficult to control as they are soil-borne and can spread through irrigation water. In conclusion, NTB Province has a significant opportunity to become a national garlic seed center, but some challenges must be addressed.

Keyword: Garlic, Highlands, Sambori, Seeds, Sembalun

CPB-018

Study on Genetic Variance and Heritability of Aluminium Tolerance Traits in Cayenne Pepper (*Capsicum annuum* L.)

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Abstract

Expanding the planting area into less fertile acidic soils is imperative to augment Indonesia's national hot pepper production because of the diminishing availability of more arable land. However, the considerable potential of these soil types is accompanied by challenges arising from acidic conditions characterized by high exchangeable aluminum and poor soil fertility impeding crop productivity. The use of cultivars tolerant to aluminum is regarded as the most promising approach to cope with these challenges. Aluminum tolerant cultivar development requires high variability of the genetic materials and information on heritability on aluminum tolerant traits. The objective of our study was to obtain information of genetic variance and to estimate heritability value of traits correlated to tolerance to aluminum. To access these objective, 40 cultivars collected were challenged to aluminum stress in a randomized completely design experiment with 3 replications. The experiment was set up in a deep water culture (DWC) system hydroponics with AB mix nutrient culture supplemented with 1600 ppm $AlCl_3.6H_2O$. The results showed that genetic variance of traits observed on the cultivars collected were categorized low to high with coefficient of genetic variance (CGV) ranged from 13% to 127%. High CGVs were observed on root dry weight, shoot dry weight, root fresh weight, shoot fresh weight, and root volume which indicate that selection for aluminum tolerance based on these traits will be successful. Heritability estimate on all traits observed in stressed condition were categorized high indicating that tolerance to aluminum stress was genetically controlled.

Keyword: Chili pepper, CGV, Heritability, Selection, Stress tolerance

CPB-019

Pruning for Sustainable Fruit Production of Black Mulberry

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Abstract

Black mulberry (*Morus nigra* L.) fruit production in Indonesia is still neglected and hence unreliable, as its cultivation is generally directed for silk production. Sustainable fruit production of fruit trees is a commonly conducted by branch pruning in Bengkulu Tengah. An experiment was conducted to evaluate primary branch pruning on black mulberry growth, yield, and fruit quality. One year old of black mulberry cutting propagated trees were used. The primary branches of the trees were cut off at either 60 cm or 120 cm from the ground, and the number of primary branches were maintained at 2, 3 or 4 branches. The results showed that there was no significant effect of the interaction between branch cutting height and number of primary branches on the observed parameter. Crop growth, fruit yield, and fruit quality of mulberry treated at 120 cm primary branch cuttings were better than those off at 60 cm. Furthermore, the more branches were left, the better the crop growth and their fruit yield were. We concluded that pruning primary branches at 120 cm from the ground and maintaining 4 primary branches resulted in the best growth and fruit yield of black mulberry, but not for fruit quality as compared to the other treatments did. We also concluded that cutting promoted shoot and fruit development of black mulberry; hence this technique could be used for sustainable fruit production in black mulberry.

Keyword: Fruit production, Mulberry, Number of branches, Pruning height

CPB-020

Effects of Ab-Mix Rates And Watering Time on The Growth and Yield of Black Potato Crops (*Plectranthus Rotundifolius*)

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Abstract

Black Potato (*Plectranthus rotundifolius*) has been used as a source of carbohydrate for diabetic people. In Java, it is ussually planted during long period of dry season where water is barely available and without fertilizer application. Two experiments were run at the greenhouse arranged in completely randomized design (CRD) and replicated 9 times. The first experiment was to evaluate the effect of fertilizer rates (0, 50, 100, 150% of AB-mix solution on the growth and yield of black potato crops. The second experiment was to evaluate the effect od watering times (every 1, 5, 9, and 13 day) on the growth and yield of black potato crops. Germinating seeds were seeded in a polybag, filled with 10 kg of media, a mix of top soil, manure, and rice paddy charcoal (3:1:1). The crops was fertilized with AB-mix solutions weekly. The crop growth and yield were observed. The results showed that the interaction between fertilizer rates and watering increments did not significantly affect crop growth and yied. Likewise, fertilizer rates did not significantly affected crop growth and yield. Finally, watering time significantly affected crop growth, in which longer watering time reduced crop growth. However, it did not significantly affect crop yield. We concluded that Black Potato might grow well and produced good yield at marginal soil.

Keyword: AB-mix, Crop growth, Drought, Plant nutrition, Tuber yield

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CPB-021

Inheritance of Salinity Tolerance in Bird Pepper

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Abstract

Currently, researchers are studying various technologies to overcome the weaknesses of saline coastal land, one of which is breeding for saline tolerant plants. To increase the effectiveness of selection for breeding saline-tolerant pepper birds, genetic studies of saline-tolerant traits are needed. This research examines the inheritance of the trait of salinity tolerance in parents crossing tolerant parents (A10) X sensitive parents (A04 and A18) and the results of their crosses. Tests were carried out with saline stress created artificially with a hydroponic system in a greenhouse. The complete population consisting of P1, P2, F1 and F2 from both crosses was exposed to 6000 ppm NaCl stress for 8 weeks. As a control, all populations without NaCl stress were also planted. Each plant is given a score with a Stress Tolerance Index (STI) value based on plant height, number of leaves, leaf green stem diameter and stomata density. F2 populations from both crosses were grouped under 1, 3, 5, 7 and 9 categories based on average STI. The F2 distribution of both crossed populations showed a non-skewed distribution indicating the involvement of several major genes along with many minor genes for salinity tolerance. The experimental results concluded that the salinity tolerance trait was polygenic.

Keyword: Chili, Minor genes, Normal distribution, Stress tolerance index

CPB-022

Study on Population Density and Mulch Effectiveness in Early Growth of Onions Seedling

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Abstract

Onion cultivation, known as "Bawang Bombay" (*Allium cepa*), is relatively new in Indonesia, a tropical region. It can be done using transplanting or direct seed planting (DSP). Farmers favor DSP as it eliminates the need for a separate nursery, but optimal seedling density and effective weed control are crucial during early growth stages. This study, conducted in Yogyakarta from May to July 2024, investigated the impact of onion seedling density and mulch on early growth using DSP. Different seedling densities (2, 4, 6, and 8 g per m^2) and mulch treatments (no mulch and plastic mulch) were examined in a split-plot design with four replications. Results showed no interaction between seedling density and mulch on any variables. Treatments did not significantly affect seedling emergence percentage, plant height, and leaf number. Plastic mulch reduced weed emergence but was not significantly different from no mulch. Higher seedling densities suppressed weed emergence. Dominant weeds during early growth were *Eleusine indica* and *Portulaca oleracea*. Plastic mulch effectively suppressed *Eleusine indica* growth, while seedling density did not significantly impact either weed species. The findings suggest that simple practices like increasing seedling density and using plastic mulch can effectively manage weeds, particularly for *Eleusine indica*, and support early onion growth maintenance, making these practices beneficial for farmers.

Keyword: Onion, Mulch, Seedlings, Weed control, Tropical region

CPB-023

Post-harvest Characteristics of Cabbage using Natural Pesticide Citronella Oil: Weight loss, Rot Level and Sensory Properties

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Abstract

Cabbage quality including whole, storage capacity and sensory can be influenced by treatment during cultivation. Citronella oil has antibacterial and antifungal properties, so that citronella oil has the potential to be used as a natural pesticide in horticultural plants. The research aims to determine the effect of using citronella oil as a natural pesticide on the post-harvest quality of cabbage. Cabbage cultivation is carried out intensively in fields. The research used a Randomized Block Design (RAK) with 4 treatments repeated 5 times. The treatment frequency or interval of application of fragrant oil series 2 cc / l, namely: A). 1 time a week: B). 2 times a week: C). farmer's method (imidacloprid 1cc / l) 1 time a week: D). Without control. After harvesting the cabbage, the whole cabbage level, weight loss, amount of rot, and sensory tests of fresh and boiled cabbage samples were observed. The results showed that cabbage using Citronella oil pesticide 2x per week experienced slower rot and lower % weight loss. The results of statistical analysis of fresh and boiled cabbage sensory tests were $p>0.05$, panelist preferences for cabbage with Citronella oil pesticide and without Citronella oil pesticide were the same.

Keyword: Cabbage post-harvest, Citronella oil, Natural pesticide

CPB-024

Optimizing Shallot Growth and Yield Using Manure Compost

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Abstract

Shallots (*Allium ascalonicum* L.) are valuable horticultural crops. In response to soil degradation in many productive agricultural areas, alternative crop production methods are necessary. One such method involves using or supplementing organic fertilizers. Among these, manure compost offers several benefits, including nutrient provision, soil loosening, improved soil structure, increased porosity and aeration, enhanced soil microorganism composition, better water retention, and facilitated root growth. This study aims to determine the optimal manure compost dosage for shallot growth and yield. The research was conducted at the experimental unit of the Agriculture Faculty, University of Bengkulu. A completely randomized design (CRD) was employed, with a single factor: compost dosage at six levels (0, 5, 10, 15, 20, and 25 tons/ha). Each dosage was replicated five times, and each experimental unit contained six polybags with sample plants. Observed variables included plant height, leaf number, tiller number, tuber number, tuber length, wet leaf weight, dry leaf weight, and bulb air dry weight. Results indicated only plant height and bulb air dry weight were affected by manure application, in which compost application from 0 to 25 tons/ha linearly increased plant height. Additionally, the effect on bulb air dry weight was quadratic, with an optimum dosage of 7 tons/ha. In experimental pots, applying organic compost moderately affected shallot yield. Further studies are needed to elucidate the impact of compost at the field scale, considering different soil types and climatic conditions.

Keyword: Manure compost, Microorganism, Optimal production, Sustainable agriculture

CPB-025

The Effect of Liquid Organic Fertilizer and Compost on the Growth and Yield of Shallots

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Abstract

Shallots (*Allium ascalonicum* L.), a valuable crop in Indonesia, are frequently used in everyday cooking. This study aims to determine the optimal interaction between various concentrations of rabbit urine as liquid organic fertilizer and different compost doses on shallot growth and yield. It also seeks to identify the best concentration of rabbit urine POC and the optimal compost dosage for improving shallot growth and yield. Conducted from January 2023 to March 2023 in Kel. Marga Rahayu, Kec. Lubuklinggau Selatan II, City of Lubuklinggau, the experiment utilized a Completely Randomized Block Design with two factors. The first factor was rabbit urine concentration at five levels: U0 = 0 ml/l, U1 = 30 ml/l, U2 = 60 ml/l, U3 = 90 ml/l, and U4 = 120 ml/l. The second factor was compost dosage at four levels: P0 = 0 ton/ha, P1 = 2.5 ton/ha, P2 = 5 ton/ha, and P3 = 7.5 ton/ha. The interaction between rabbit urine and compost did not significantly affect any observed variables. However, a concentration of 90 ml/l of rabbit urine POC was found to be optimal, significantly improving the number and diameter of tubers. Although compost dosage alone did not show significant differences, the best result was observed with 0 ton/ha, considering the land had already been treated with a base fertilizer.

Keyword: Compost, Liquid Organic Fertilizer, Rabbit Urine, Shallots

CPB-026

Study of Arbuscular Mycorrhizal Fungi Population And Diversity in Robusta Coffee (*Coffea Canephora* Pierre) Plantation in The District of West Lampung Indonesia

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Abstract

Arbuscular mycorrhizal fungi (AMF) are beneficial fungi that occur naturally in the soil. However, biotic and abiotic factors can affect the population and diversity of AMF. This study aimed to evaluate the population and diversity of AMF in the rhizosphere of Robusta coffee grown in the West Lampung District, Indonesia. Soil samples were collected from two coffee cropping systems: monocropping and mixed cropping. Samples were taken from 7 points, each consisting of three coffee plants. For each plant, soil samples were taken at a depth of 20 cm from two different points, each 20 cm from the base of the coffee stem. The samples from the three coffee plants at each point were then composited to represent a single sample point. The wet sieving method was used to isolate AMF spores from the soil samples. AMF propagules in the soil samples were propagated using the trapping culture method with maize and sorghum as host plants. The results showed that the number of AMF spores in the rhizosphere of coffee grown in mixed cropping (107.1 spores/50 g soil) was higher than in monocropping coffee (61.3 spores/50 g soil). From the trapping culture, five species of AMF were found in the mixed coffee cropping system (S1, S3, S4, S5, and S7), and six species (S1, S2, S3, S4, S6, and S7) in the coffee monocropping system. AMF type S1 (*Acaulospora* sp.) was the dominant species in both coffee cropping systems.

Keyword:

CPB-027

Correlation Analysis and Multi-Stage Selection for Extended Shelf Life in Tropical Tomato Breeding Using the *Sletr1-2* Allele

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Abstract

Tomatoes (*Solanum lycopersicum* L.) face substantial post-harvest losses due to rapid ripening. This study explored correlations between fruit shelf life and important agronomic traits to develop more effective selection strategies for long-shelf-life tomatoes. Using backcross populations derived from a mutant hybrid carrying the *Sletr1-2* allele, we conducted correlation analyses and implemented a multi-stage selection strategy combining phenotypic, molecular, and physiological aspects. Pearson correlation coefficients were calculated to determine relationships between traits. Results revealed significant negative correlations between shelf life and flowering time ($r = -0.379$, $p<0.01$) and first harvest time ($r = -0.380$, $p<0.01$), and positive correlations with fruit set ($r = 0.168$, $p<0.01$). Selected BC3F1 genotypes demonstrated up to a four-fold increase in shelf life compared to the commercial variety 'Intan' (56.44 ± 3.29 vs 13.88 ± 0.61 days) while maintaining or improving yield components. The highest-performing genotype, BC3F1.3.2.14.37.4, exhibited extended shelf life and increased fruit weight per plant (901.28 ± 212.38 g vs 555.88 ± 76.65 g for 'Intan'). This research provides new insights into trait relationships in long-shelf-life tomato breeding, offering a scientific basis for developing efficient selection strategies with the potential to enhance global tomato breeding programs.

Keyword:

CPB-028

Development of Biochar on Yield Growth and the Quality of Sweet Corn in Coastal Land

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Abstract

Sweet corn (*Zea mays* saccharata Sturt L.) is a cereal crop commodity that is liked by many people because it has a sweet taste, soft texture and is rich in nutrients such as carbohydrates, sugar, fiber, protein, fat and vitamins. The aim of this research is identifying the content of various types of biochar, determining the effect of various types of biochar on the growth, yield and quality of sweet corn on coastal land, determining the best dose of biochar for the growth, yield and quality of sweet corn on coastal land. Phase I research, namely making biochar, will be carried out in July 2023, in Bentiring Village, Muara Bangkahulu District, Bengkulu City. The design used was a Completely Randomized Design (CRD), the data results were analyzed statistically using analysis of variance, then if there was a real effect then it was continued with the Least Significant Difference (BNT) test at the 5% level. Phase I research results show the highest C-organic analysis results in bamboo charcoal biochar, the results of the analysis of the water content of bagasse biochar showed the highest results compared to other bioclast highest pH levels are found in bamboo biochar raw materials and the lowest in husk charcoal biochar, the highest lignin levels are found in sugarcane biochar raw materials and the lowest in husk charcoal biochar, The highest cellulose content is found in sugarcane bagasse biochar material and the lowest in organic biochar material from husk charcoal, The results of the analysis of the types of biochar show that there are differences in the CEC for each type of biochar material, such as the husk charcoal biochar showing the highest results. Phase II research was carried out in experimental garden Jl. Talang Pauh Pedati Market, Pondok Kelapa District, Central Bengkulu Regency in September - December 2023.Research in phase II carried out planting of sweet corn plants on coastal land treated with different types of biochar and biochar doses. The research used a Complete Randomized Block Design, with 2 factors, the first factor was type of biochar: B1: Rice husk biochar, B2: Bamboo biochar, B3: Sugar cane biochar, B4: Mixed biochar. The second factor is the biochar dosage which consists of: D1 : D0 : 0 tons/ha, D1 : 5 tons/ha, D2 : 10 tons/ha, D3 : 15 tons/ha. The research results show There is an influence between the type and dose of biochar on the root dry weight variable. The types of bagasse biochar and mixed biochar showed the highest results for each variable observed on the growth and yield of sweet corn. Dosing biochar Providing a biochar dose of 5/ton was able to meet the yield needs of sweet corn plants

Keyword: Biochar, Coastal land, Sweet corn

CPB-029

Variability of Shoot and Roots traits Soybean for Salt Stress under Hydroponic at The Early Vegetative Growth Stage

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Abstract

Salinity is a significant abiotic stress that severely affects plant growth and constrains productivity. The study evaluated genetic variation in soybean varieties to identify salt-tolerant genetic resources, which could be used in the bred soybean improvement program. A diverse panel of 6 soybean varieties was evaluated at the early vegetative stage to characterize morphological and physiological under salt stress (60 and 120 mM NaCl). Under salinity stress, mean tap root length (RL), shoot length (SL), root fresh weight (RFW) and shoot fresh weight (SFW) decreased significantly by 13, 17, 33 and 35%, respectively, while root dry matter (RDM) and shoot dry matter (SDM) increased significantly by 10 and 8%, respectively. Of the four derived traits, the ratios of RL/SL, RL/RFW and SL/SFW increased significantly by 9, 40 and 28%, respectively, under drought, while the ratio of RFW/SFW decreased significantly by 5%. However, a wide variation between genotypes was observed for all 10 studied seedling traits under both control and drought conditions. Broad sense heritability ranged from 0.53 (RL) to 0.93 (SL) under control condit ions and from 0.47 (RL/RFW) to 0.83 (SL) under drought conditions. The correlation coefficients between the traits were either weak or moderate, indicating that the studied traits can be modified independently by selection.

Keyword: Abiotic stress, Hydroponic, Physiological, Salinity, Vegetative stage

CPB-030

Yield and Quality of Cantaloupe (*Cucumis melo* L. var. Cantalupensis) on the Application of Three Sources and Dosages of Manure

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Abstract

The cultivation of cantaloupe in Indonesia usually involves cow manure as a source of organic matter while goat and chicken manures are not common in growing cantaloupe. Different source of organic matters contain different nutrients that might be responded differently in plant growth, yield and yield quality. This study aimed to evaluate the manure sources for yield and yield quality of cantaloupe at different amount application. This research was carried out in Bengkulu City, Bengkulu Province. A Factorial design of Completely Randomized Design was set with 2 factors, they were manure sources and the dose of manure which was repeated 3 times. The treatments in this study were sources of manure, namely cow manure, goat manure and chicken manure. The second factor was the dose of manure, namely 10 tons/Ha, 15 tons/Ha, and 20 tons/Ha. The results indicated that the cow manure at 20 tons/Ha tended to contribute to high fruit weight of cantaloupe and fruit qualities (fruit diameter and flesh fruit thickness). Goat manure treatment affected fruit sweetness better than cow and chicken manure. Chicken manure treatment at low dose (10ton/Ha) was found better in producing plant fresh weight and fruit sweetness than cow manure.

Keyword: *:* Blewah, Cantaloupe, Cantaloupe quality, Manures

SCOPE 2
SOCIAL, ECONOMY, AND POLICY

SOC-001

Exchange Rates and Prices Variability and Their Effect on Dynamics Demand for Indonesian Fresh and Frozen Tuna Exports

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Abstract

This study is aimed at examining and analysing effect of the volatility of tuna prices and exchange rates on the demand for Indonesian tuna exports. This study uses monthly time series data of fresh tuna export volume, frozen tuna export volume, fresh tuna price, frozen tuna price, and the rupiah exchange rate for the period 2012:1-2020:12. This data was obtained from UN Comtrade, the Central Statistics Agency (BPS), the Ministry of Maritime Affairs and Fisheries. Cointegration and Error Correction approach were applied to examine tuna export demand which is assumed to be a function of fresh tuna price (HTS), frozen tuna price (HTB), frozen tuna price relative to fresh tuna (HBS), frozen tuna price variability (VTB), fresh tuna price variability (VTS), real exchange rate variability (EXC) and exchange rate variability (VEXC). Factors that affect fresh tuna exports in Indonesia partially are FZTE, FRTP, FZTP, and HBS in the short term (ECM) while in the long term there are no influential factors.

Keyword: Dynamic export, Exchange Rates, Prices Variability, Tuna

SOC-002

The Role of Extension Workers and Farmers' Perceptions in Digitizing Rubber Marketing in Kuantan Singingi District, Indonesia

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Abstract

Due to Covid-19 restrictions on physical interaction, the marketing digitization system has grown rapidly and become popular on social media. Indonesia's agricultural sector, which includes rubber as a mainstay commodity besides palm oil, has also been affected by this trend. Indonesia is the world's leading rubber area, covering 3,826,191 ha, with Riau province alone accounting for 334,610 ha. Kuantan Singingi Regency has the largest rubber area in Riau, covering 29,617.32 ha, and the highest rubber prices in the district. This study aims to examine the role of extension workers in digitalizing rubber marketing and farmers' perceptions of marketing digitalization. The survey was conducted in three sub-districts with the largest rubber plantation areas, and a sample of 80 people was taken by Proportional Random Sampling. The data was analyzed using the Likert Scale. The study found that extension workers play an important role in carrying out their duties and that farmers have a positive perception of digitalization in rubber marketing.

Keyword: Digitalization, Extension, Marketing, Rubber

SOC-003

Farmers' Perceptions of Sustainable Bio industrial Agriculture in Bengkulu Province

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Abstract

Bioindustrial agriculture is an agricultural business carried out on a bioindustry basis in managing and optimally utilizing all biological resources including biomass or agricultural waste to produce various feed, fertilizer and energy products in an harmony ecosystem . One effort to develop sustainable bioindustrial agriculture in Bengkulu Province is to integrate crops and livestock. Farmers will adopt bioindustrial farming depending on the level of perception, where the higher the level of perception, the greater opportunity to adopt bioindustrial farming. This research aims to analyze farmers' perceptions of sustainable bioindustrial agriculture based on the integration of rice and cattle in Bengkulu Province. This research was carried out in Seluma and Rejang Lebong Regencies in March – July 2024. The research method used a survey method with data collection through observation and interviews. The sampling method used the Accidental Sampling technique, where the research samples were taken from 200 lowland rice farmers who also raised cattle. Data analysis techniques use a Likert scale and percentages. The research results show that in the relative advantage parameter, the level of compatibility, complexity, triability and observability have a moderate perception with an index of 66.30%; 57.13%; 63.73%; 65.90% and 64.20%. So it can be concluded that in general farmers' perceptions of sustainable bioindustry farming based on rice and cattle in Bengkulu Province are in the medium category with an index of 63.45%.

Keyword: Perception, Bioindustry agriculture, Sustainability

SOC-004

Multidimensional Poverty of Labour Fisher Households According to the Indonesia Central Bureau of Statistics Indicators in Bengkulu City

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Abstract

Poverty is a cross-area, cross-sector, and cross-generation problem, so efforts to overcome this require a comprehensive, integrated, and multidimensional sustainable approach. The objectives of this research are (1) to analyze the poverty of fishermen's households based on the multidimensional poverty indicators of BPS Indonesia and (2) to analyze the factors determining the poverty level of fishermen's households in Bengkulu City. The sampling method in this research used Accidental Sampling with 100 fishing workers as respondents. The data analysis method in this research analyzes multidimensional poverty based on the Indonesian BPS instrument. The Central Statistics Agency measures poverty using the ability to meet basic needs (basic needs approach) by defining poverty as the inability to meet minimum standards for basic needs with 14 indicators as assessment points. The logistic regression model analyzes the determinants of multidimensional poverty in fishing worker households. The results of this research are that the multidimensional poverty of fisherman labor households in the coastal area of Bengkulu City based on BPS instruments is 21% of poor households, 29% of vulnerable households are inadequate, and 50% of households are not poor. Factors that have the potential to significantly influence the poverty of labor-fishing households on the coast of Bengkulu City are years of schooling and household size.

Keyword: Central Bureau of Statistics, Labour fisher, Multidimensional Poverty

SOC-005

Supplier's Satisfaction Level in The Fresh Fruit Bunch Supply Chain at Bengkulu Province

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Abstract

Low satisfaction level among suppliers could break down partnerships in The Fresh Fruit Bunch Supply Chain. This is greatly influences the performance and smoothness of the fresh fruit bunch supply chain. This research aims to analyze Supplier's Satisfaction Level in The Fresh Fruit Bunch Supply Chain at Bengkulu Province. The level of satifaction among suppliers of fresh fruit bunches in the supply chain in Bengkulu Province is assessed through five dimensions, namely 1) Tangible, 2) Realibility, 3) Responsiveness,4) Assurance, and 5) Emphaty. These five dimensions are measured using a Likert scale to obtain a satifaction index. The research results show that the level of satisfaction among between suppliers in the fresh fruit bunch supply chain is in the very satisfied. This research also found that there are any indicators that have the potential to weaken the level of satisfaction. The solution on these indicators that have the potential to weaken this level of satisfaction is a collaborative effort involving independent farmers, suppliers, and factories to inform any unsatisfaction items during transaction.

Keyword: Satisfaction, Supplies, Supply chain

SOC-006

Business Performance and The Level of Satisfaction in The System of Supply Chain Fresh Fruit Bunches (FFB) of Oil Palm Bengkulu Province

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Abstract

Bengkulu Province is one of the largest CPO producers in Indonesia. In its implementation, the fresh fruit bunches (FFB) supply chain system involves many intermediary merchants because not all farmers can supply FFB directly to the factory. To provide the best service and minimize the potential failure of FFB supply, it needs to be evaluated based on the company's performance and the satisfaction of the supplier's performance. Therefore, this study attempts to measure the performance and the satisfaction of business perpetrators in the supply chain in the Bengkulu Province. It was conducted in North Bengkulu and Seluma District by representatives of palm oil producer centers in Bengkulu Province. Data was collected by interviews with 120 oil palm farmers, four collector traders in the village, two big traders, and two CPO factories. The has been collected and analyzed by the importance-performance analysis (IPA) and customer satisfaction index (CSI). The analysis results show the importance and performance assessment of 84,28% attributes. In terms of analysis of the level of satisfaction with the service between business operators in a supply chain, it can described as very satisfied. Enhancing the performance of the supply chain needs to optimize attributes in quadrants 3 and 4. Therefore, independent farmers, suppliers, and CPO Factories in the CPO supply chain in Bengkulu must collaborate. They have to commit to building a trading information system that is transparent in the CPO supply chains in Bengkulu Province.

Keyword: Fresh fruit bunches, Importance, Performance, Supply chain, The level of satisfaction

SOC-007

Farmers' Readiness in Adopting Superior Hybrid Corn Seeds, Bengkulu Province, Indonesia

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Abstract

In 2023, Bengkulu Province will produce 52,785 tons of hybrid corn kernels, which is down 19,971 tons or -27.45 percent compared to 2014 which reached 72,756 tons. The decrease in production was caused by a decrease in the harvest area of 5,506 ha from 15,643 ha to 10,137 ha or a decrease of 35.20 percent. Seluma Regency and North Bengkulu Regency produce 35.72% of the total corn production in Bengkulu Province. This study aims to find a model of the level of farmer readiness in using superior hybrid corn seeds in Bengkulu Province. There are several variables, namely the price of superior corn seeds, farmers' understanding of hybrid corn cultivation, determining factors for superior corn productivity, and farmers' expectations for hybrid corn productivity as intervening variables, farmer readiness in using superior hybrid corn seeds. The data analysis method uses a Likert scale and SEM-PLS. The population in this study was 813 people. Respondents were taken as many as 20%, namely 183 people. Sampling was carried out using the simple random sampling method. Field data and information were obtained using a questionnaire. The results showed that the variables of the price of superior corn seeds and farmers' expectations for corn productivity had a direct effect on farmers' readiness to use superior hybrid corn seeds, except for the determining factors for hybrid corn productivity and farmers' understanding of hybrid corn cultivation. The variable price of superior corn seeds and the determining factor of hybrid corn productivity has a direct effect on farmers' expectations of hybrid corn productivity, except for the variable of farmers' understanding of hybrid corn cultivation. The variable price of superior corn seeds and the determining factor of hybrid corn productivity affect farmers' readiness to use superior hybrid corn seeds, after passing through the mediating variable, namely farmers' expectations of hybrid corn productivity, except for the variable of farmers' understanding of hybrid corn cultivation.

Keyword: Adoption, Farmer readiness,Hhybrid corn, Productivity, Superior seeds

SOC-008

Investigating Consumer Willingness to Try 'Nata De Banana Peel' – An Innovative Product from Banana Peel Waste

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Abstract

This study investigates the willingness of consumers to try the novel product "Nata de Banana Peel," made from waste banana peels. Indonesia produces a lot of bananas, and the food and industrial sectors are investigating ways to use the peels of these bananas. The study intends to analyze the nutritional makeup and address the environmental effects of banana peel waste, offering potential directions for developing goods with additional value. One such item is Nata de Banana Peel, made from Acetobacter xylinum fermentation bacteria. The research evaluates customers' inclination to try this new product by considering aspects such as the product's image, safety, benefits awareness, flavor preferences, and environmental impact. Data is gathered using a social case-based methodology, a questionnaire, and devices like cameras and telephones. The Food Neophobia Scale (FNS) and the Domain Specific Innovation Scale (DSI Scale) are used in the study to assess consumer sentiments. The findings show inclinations in favor of new foods and resistance motivated by cultural prejudices, fear, and trust. The conclusion provides insights for the food business, highlighting the necessity for focused interventions to remove obstacles and promote a more accepting attitude toward novel foods.

Keyword: Factor, Organic, Vegetable

SOC-009

Contribution of Women in Household Decision Making (Case Study of Women Selling Rejected Laying Hens in Pagar Alam City South Sumatera Province)

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Abstract

Women who sell spent hens in Pagar Alam City, South Sumatra Province, as wives, contribute to support the household economy. A wife who works to help her husband earn income has a role and takes part in determining decisions in the household. The activities in which decisions are made in the household by husband and wife include production activities, expenditure, the establishment of household rules, and social activities. This research aims to analyze the role of women selling spent hens in household decision-making in Pagar Alam City, South Sumatra Province. The population of this study was women selling spent hens who also had the status of wife in the household. The research population was 39 people taken by census. The data analysis method used is the descriptive method. Woman selling spent hens in Pagar Alam City, South Sumatra Province have a great role in household decision-making. Decision-making taken by the wife herself dominates in four fields, namely in the household production at 64%, in the household expenditure at 49%, in terms of forming household rules at 25% and in the social activities at 29%. Then household decision-making by husband and wife together but the wife is more dominant. Decision-making by husband and wife together, by husband and wife but the husband is dominant, and by the husband herself are less.

Keyword: Decision-making, Household, Spent Hens

SOC-010

Farming Efficiency Analysis and Farmers' Perceptions of Red Chili Proliga Innovation in South Sumatra

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Abstract

The main component of the Proliga technology compared to other red chilli cultivation technologies to increase red chilli productivity is the application of a 2:1 zigzag planting system. This planting system can increase plant population density from 20,000 plants/ha to 29,000-30,000 plants/ha, so it is hoped that productivity can be increased to 20 t/ha. This research aims to analyze the efficiency of Proliga red chilli technology farming and farmers' perceptions in Tanjung Pering village, Indralaya district, Ogan Ilir regency - South Sumatra. The planting was conducted in April 2020. The research showed that red chilli production reached 17.1 t/ha with a total production cost of IDR 94,330,000/planting season and income of IDR 179,270,000/planting season, with an R/C ratio of 2.9. This shows that South Sumatra's Proliga red chilli farming business is very profitable and worthy of development. Most farmers surveyed had a positive perception of the Proliga technology components introduced, based on four dimensions of innovation characteristics. Farmers' perceptions of the Proliga red chilli technology give high scores (3.86 - 4.00) to the dimensions of relative advantage, ease of trying, and easy-to-observe results, but have moderate dimensions of suitability.

Keyword: Farmers' perceptions, Farming efficiency, Proliga technology, Red chilli

SOC-011

Analyze of E-Commerce Revenue, Consignment, and Store of Kalamansi Orange Syrup Product on MSMEs Putri Bengkulu in Bengkulu City

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Abstract

This research focuses on the income of kalamansi orange syrup at Putri Bengkulu's business. The use of COGS, total costs, and revenue calculations will obtain revenue from the sale of kalamansi orange syrup. Furthermore, the income data will be tested with an independent t test analysis to prove whether the data is different or not. This study aims to: (1) To analyze the total revenue of kalamansi orange syrup products in MSMEs Putri Bengkulu, Central Bengkulu Regency (2) To analyze sales revenue through E-commerce, Consignment and Stores of kalamansi orange syrup products in MSMEs Putri Bengkulu, Central Bengkulu Regency (3) To analyze the difference in revenue between Stores and Consignment, Stores and E-commerce, Consignment and E-commerce. Purpose-driven method was used for respondent selection. A total of one respondent was selected with the consideration that the respondent is the person who has the most in-depth knowledge about the problem to be researched. Data collection methods are primary data and secondary data. The results showed that (1) The total revenue of the kalamansi orange syrup product "Putri Bengkulu" received was Rp.29,390,361.20. (2) The revenue of the kalamansi orange syrup product "Putri Bengkulu" offline/store sales received revenue of Rp.17,451,013.81/month, e-commerce sales received revenue of Rp.7,682,598.09 /month and consignment sales received revenue of Rp.4,256,749.30/month. (3) The t-test results show that store and consignment revenue data are significantly different. Store and E-commerce revenue data are significantly different. While consignment and E-commerce revenue data are significantly not different.

Keyword: E-Commerce, Consignment, Revenue, Store

SOC-012

Socio-economic Determinants of Multidimensional Poverty in Bengkulu City: A Household Level Analysis

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Abstract

The sustainable poverty trap is an essential issue for people's livelihoods. This issue has an indirect relationship to non-monetary poverty. Health, education, and standard of living are multidimensional, as are the means and ends of poverty. So, investigating the determinants of multidimensional poverty has important policy implications in Bengkulu City. This research examines the social and economic factors of multidimensional poverty in Bengkulu City. Binary logit regression has been used to identify the social-economic determinants. Parameters have been identified as significant drivers of multidimensional poverty, which are age, dependency ratio, education, formal work, non-formal work, underemployment, access to financial services, and disability. The regression results suggest that age and education play an essential role in explaining the variations in multidimensional poverty. The outcomes of the research are scientifically significant, and this study helps the government and social workers eradicate poverty in this region by formulating better policies and management.

Keyword: Bengkulu, Binary logit regression**,** Poverty determinants, Multidimensional poverty

SOC-013

Clustering of Food Security Areas in Bengkulu Province Using Biplot Analysis Approach

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Abstract

Food security is one of the important issues in developing countries. The strategy to maintain food security is generally carried out by increasing the availability of domestic food supplies either by increasing the productivity of harvest results or through import policies. Food self-sufficiency is a government commitment, especially in developing countries. The government makes various efforts, both in planning and implementing policies through programs to meet staple food production targets. The Food and Agriculture Organization (FAO) identifies four components of food security, including food availability, food affordability, food utilization, and stability. Bengkulu Province until 2023 is the second poorest province on the island of Sumatra. This has an impact on the aspect of food affordability which is a component of food security. There needs to be mapping or grouping in each region in Bengkulu Province so that the policies formed and implemented can be more optimal. The purpose of this study is to group and map regions or districts in Bengkulu Province that have similar characteristics based on aspects of food availability, aspects of food affordability or physical access to food, and aspects of food utilization. The method used is biplot analysis to describe regional characteristics and variable correlations into a two-dimensional graph. The results of the grouping of food security areas based on the characteristics of the three aspects are three clusters. The first cluster consists of Kaur, South Bengkulu, and Lebong. The second cluster consists of Central Bengkulu, Mukomuko, and North Bengkulu. The third cluster consists of Rejang Lebong, Seluma, and Kepahiang. The first cluster tends to have good food security because its characteristics are relatively close to the indicators of food availability and food utilization. The second cluster has strong characteristics in the indicator of food affordability. The third cluster has characteristics that describe indicators of lack of electricity, clean water, poverty rate, and life expectancy.

Keyword: Biplot Analysis, Clustering, Food Security

SOC-014

Visitor Satisfaction Problems of the Kampoeng Durian Agritourism and Mapping Its Solution using a model SERVQUAL

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Abstract

This research investigates service quality within Agrowisata Kampoeng Durian, a rural tourism destination in Bengkulu Tengah Regency. Employing the SERVQUAL model—comprising Reliability, Responsiveness, Assurance, Empathy, and Tangibles (2RAET)—the study pursues three key objectives: (1) identifying service quality issues impacting customer satisfaction, (2) discerning primary and secondary challenges and (3) proposing practical solutions. The study focuses on Agrowisata Kampoeng Durian, located in Datar village, Taba Penanjung District, Bengkulu Tengah regency, conducted in February 2023. Methodologically, the research employs several analytical tools: IP TCSVGAP Analysis, IP FCSVGAP and IPA (Cartesian Diagram), and GAP Analysis. The analysis reveals 14 mismatches (24%) between service performance and visitor expectations. Significant problems are concentrated in two SERQUAL sub-elements, while secondary challenges involve four sub-elements. Resource allocation adjustments are recommended to align performance with visitor needs. Managers must balance resource utilization for optimal outcomes.

Keyword: Agritourism, SERVQUAL Model, Visitor Satisfaction, Problems and Solution, IPA Diagram Cartesius, GAP Analysis

SOC-015

Socio-Economic Impacts of Establishing Palm Oil Company: A Case Study in Pondok Kelapa Village, Central Bengkulu District

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Abstract

This study examines the socio-economic impact of establishing the Palm Oil Company in Pondok Kelapa Village, focusing on infrastructure, health, and environmental aspects. The research targets a population of 537 individuals from Dusun 5, Pondok Kelapa Village, with a sample size of 40 respondents aged 15 to 64 years. Data analysis methods include multiple linear regression, t-test, F-test, and R^2 test. The findings indicate that the establishment of a palm oil company has no significant simultaneous impact on the socio-economic conditions of the community. This is evidenced by the F-test results, which show a significance value of 0.502 ($p > 0.05$) and an F-calculated value of 0.800 (less than the F table value of 2.86). Additionally, the relationship is fragile, as demonstrated by an R^2 value of 0.062. None of the examined aspects significantly affected the socio-economic conditions of the community in Pondok Kelapa Village.

Keyword: Multiple linear regression, Palm oil company, Pondok Kelapa Village, Socio-economic impact

SOC-016

Determinants of Womanpreneurs' Halal Awareness in The Management of Madura Traditional Culinary MSMEs

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Abstract

The underlying decision for women to become entrepreneurs is to increase household income. Entrepreneurship also solves women's limited skills, time, and education. Most of the culinary businesses are owned by women in entrepreneurship, including the traditional culinary business. Traditional culinary is a dish that is authentically owned or native to a region. Meanwhile, mandatory halal 2024 is a challenge in maintaining the existence of their business, so this research was conducted to analyze the determinants of halal awareness in women entrepreneurs (womenprenenur). This research was conducted in Pamekasan Regency, with 36 sample sizes of traditional culinary businesses. The results are expected to be feedback for womenpreneurs in maintaining their business existence through the implementation of halal food. This research used the chi-square analysis method with halal awareness determinants proxied through product price variables, consistency of input provision, product quality, government regulations, consumer halal awareness, and future orientation. Determinants significantly associated with halal awareness are input consistency, product quality, government regulations, and consumer halal awareness. A womenpreneur is aware of halal products because business actors consistently provide inputs from halal sources. They also have an understanding of maintaining the quality of products sold. In addition, the encouragement of government programs and continuous consumer halal awareness also affects the level of halal awareness of MSME players.

Keyword: Chi Square, Culinary, Entrepreneur, Halal, Woman

SOC-017

Marketing Optimization Strategy for Trigona Honey Bees in Rajabasa Sub Distric South Lampung Regency, Indonesia

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Abstract

South Lampung is one of the province of Lampung's biggest producers of honey. Since most honey growing sites are close to woodlands, trigona honey bees can be housed here. Beekeeping has numerous challenges, one of which is marketing trigona honey. The research site was selected in South Lampung Regency due to its status as the largest trigona honey center in Lampung Province, which includes Rajabasa Sub District. Determining the honey marketing channels and strategies in the Rajabasa sub-district in light of both internal and external factors is the goal of this study. For this study, 50 respondents were questioned, and the data was analyzed using SWOT analysis. Two analyses are conducted: one focuses on internal strategic elements like strengths and weaknesses, while the other examines external strategy elements like opportunities and dangers. Two external factors have a difference of 1.123 and two internal factors have a difference of 0.922. There are additionally four additional methods that link internal and external components. For each choice, breeders can use one of three strategies to establish a marketing channel for Trigona Trigona honey. Trigona Honey's level of marketing efficiency is limited to the Producer-Consumer pattern. Therefore, marketing channels need to be created in order to increase honey distribution and improve product quality.

Keyword: Marketing Patterns, Rajabasa Sub Dictric, Strategy, SWOT, Tetragonula biroi

SOC-018

Empirical Analysis of Organizational Regulatory Policies and Citizen's Open Participation in Co-Production of Pulesari Tourism Village Innovation, Sleman, Yogyakarta

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Abstract

This paper aims to examine and describe the empirical analysis of organizational regulatory policies and the open participation of residents in the co-production of innovations in the Pulesari tourist village, Sleman, Yogyakarta. This research uses a descriptive qualitative approach, with data collection carried out through observation, interviews, documentation, and literature study, with the researcher as the main instrument. Data was gathered from the establishment of the Pulesari tourist village from three key informants and ten supporting informants who were selected purposively. The analysis uses an open collaborative innovation community framework, focusing on horizontal (non-hierarchical) structural governance between actors in the organization and open participation in co-production (inclusive and contingent) in the tourism village innovation process. Data analysis includes data collection, reduction, verification, presentation, and conclusions. Based on the research results, the Pulesari tourist village was declared successful in co-producing tourist village innovation. This success is evidenced by the increasing number of visits and turnover of the tourist village every year, the growth of assets, and the inclusion of Pulesari as an independent tourist village, in addition to fulfilling tourism development components. Pulesari has been a sustainable tourism village since 2016. Based on the findings, horizontal structural organizational governance arrangements through co-production have been implemented under community conditions in managing the potential of Pulesari hamlet. Co-production is implemented in an egalitarian manner without any sense of structural differences between actors. The implementation of open participation has enabled residents to play an active role inclusively and contingently, ensuring no one is left behind. This has made the Pulesari tourist village successful in co-producing tourist village innovation, transitioning from being merely part of the Salak Pondoh agrotourism area.

Keyword: Co-production, Open participation, Organizational arrangements, , Pulesari, Tourism

SOC-019

The Role of Elderly Schools in Empowering The Elderly Community in Rural Areas

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Abstract

Elderly schools are one of the innovations in non-formal education that are carried out throughout life for the elderly. One of the problems of life activities in the elderly is the decline in the level of productivity in each elderly location. This activity was carried out in Rajamandala Kulon Village, with a coverage of 56 participants at the age of 60 years, meeting activities once a month, and monitoring the activities of the elderly with elderly families. The method used in this study uses qualitative observation of participants conducted from October 2022 to January 2024. The results of this study show that the elderly school program, with a review of spiritual aspects in the elderly, welfare in the elderly, personality in the elderly, and involvement in social activities in the elderly, affects the quality of life of the elderly. The welfare aspect of the elderly is shown by enthusiasm in carrying out activities such as working so that they can meet daily needs; in personality, they are more communicative and responsive in overcoming problems and challenges; and socially, they are more active in participating in each activity. This cross-generational support is one of the factors in increasing productivity for the elderly, especially in rural areas, so that productive elderly groups and communities are formed in Rajamandala Kulon Village.

Keyword: Elderly school, Elderly, Quality of life, Productive, Rural

SOC-020

Analysis of Perceptions and Factors Influencing The Willingness To Pay (WTP) of Bengkulu City Residents for Waste Management

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Abstract

Solid waste management is a critical issue that has significant impacts on environmental quality and public health. With urban populations continuing to grow, the amount of waste generated is also increasing, necessitating effective management strategies to reduce its negative effects. Implementation of recycling systems, reduction of single-use plastic waste, and increasing public awareness about the importance of waste separation are crucial steps in efforts to maintain environmental sustainability and enhance the overall quality of urban residents' lives. This study aims to analyze urban community perceptions of waste management and identify the factors influencing their willingness to pay (WTP) for better waste management services. The research was conducted in Bengkulu City, Bengkulu Province, in April 2023. The number of respondents was determined based on SNI 19-3964-1994 regarding the Method for Sampling and Measuring Urban Waste Generation and Composition, totaling 112 respondents. Community perceptions were analyzed descriptively, and the willingness to pay was analyzed using the contingent valuation method (CVM). Factors influencing willingness to pay were analyzed using multiple linear regression. The results showed that the community's perception of waste management conditions was generally positive. On average, respondents were willing to pay (WTP) Rp 28,491 per month for improved waste management services. Family income and the number of family members significantly influenced community WTP. Higher family income correlated with higher WTP for waste management services, whereas a higher number of family dependents correlated with lower WTP for these services. Education, gender, age, and occupation did not significantly affect community WTP.

Keyword: Community perceptions, Determining factors, Waste management, Willingness to Pay

SOC-021

Degradation of The Potential Commodity Sector in Southern Sumatra: Will It be Affected by Climate Change?

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Abstract

Climate change has become one of the biggest challenges facing the world today. This phenomenon has significantly impacted the degradation of natural resources, including posing a serious threat to the agricultural and fisheries sectors, especially in developing countries. Climate change not only affects the structure of land and water, but will also directly impact potential sectors in a region. This research aims to analyze the impact of climate change on resource degradation, especially in the potential commodity sector, namely agriculture, plantations and fisheries in the Southern Sumatra region. The method used is the multiple regression analysis method with regional analysis units and the period 2015 to 2022. The results show that wind speed, rainfall, solar radiation, air temperature, air pressure and humidity influence the degradation of the agricultural, plantation and fisheries sectors in the Sumatra region. South side. This research provides an overview of forecasting the impact of climate change on certain commodity sectors so that it can help anticipate the economic impact through a policy approach by relevant stakeholders, planning for appropriate technological innovation adaptation and more effective resource management in dealing with climate change.

Keyword: Agriculture, Climate Change, Fisheries, Plantation, Southern Sumatra

SOC-022

The Analysis of Factors Influencing Smallholder Farmers' Willingness to Participate or Not in Oil Palm Replanting Program

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Abstract

The expansion of oil palm land has occurred quite massively in Indonesia in the last few decades. This significant improvement was caused by the palm oil commodities, which have quite a potential global trade value. However, many oil palm areas are still beyond their productive age, and farmers are reluctant to rejuvenate them, for various reasons. This research aims to determine the factors that have a significant influence on farmers' willingness to participate or not in the oil palm replanting program. This research will be carried out in Mukomuko Regency, Bengkulu Province. A total of 50 smallholder oil palm farmers will be collected as research samples and taken using a purposive sampling technique, namely farmers who have not participated in the replanting program. The analytical method that will be used in this research is the structural equation model (SEM). The expected research results from this research are that it is suspected that the level of farmers' knowledge of the replanting program has a significant effect on the level of readiness, and the level of readiness has a significant effect on the farmers' willingness to participate in the oil palm replanting program. This means that the better the level of knowledge, the better the level of readiness, then farmers are more likely to have the desire to take part in oil palm rejuvenation programs, and vice versa.

Keyword: Knowledge Level, Readiness, Replanting Program, Smallholder Farmers, Willingness

SCOPE 3
FOOD SCIENCE AND AGRICULTURE TECHNOLOGY

FAT-001

Formulation of Herbal Tea Bags Blend of Agarwood (*Aquilaria malaccensis* Lamk.) Leaves with Cinnamon Bark and Its Effect on Physico-Chemical Properties

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Abstract

Agarwood (*Aquilaria malaccensis* Lamk.) is a tree that thrives in tropical countries, including Indonesia. Agarwood trees also grow in Bengkulu. In addition to the stems, agarwood leaves can be processed into herbal tea. Agarwood leaves have various bioactivities, including anti-allergy, anti-cancer, anti-inflammatory, anti-ischemic, and antioxidant. Aloes leaf tea has an astringent taste and a strong odor. The astringency of agarwood leaf herbal drinks can be reduced by adding flavoring agents such as cinnamon. Cinnamon is warm, and fragrant, has a spicy and slightly sweet taste, and has pharmacological effects. This study aims to obtain the effect of the formulation of the comparison of agarwood leaves with cinnamon on the physicochemical properties of herbal teabags mixed with agarwood leaves and cinnamon and determine the best formula. This experimental design was a completely randomized design with one factor, namely the ratio of agarwood leaf powder and cinnamon powder (100:0; 95:5; 90:10; 85:15; and 80:20). The parameters observed were the moisture content and ash content of the herbal tea powder mixed with agarwood and cinnamon leaves as well as the color, polyphenol content, and antioxidant activity of the brewed water. The results showed that the comparison of agarwood leaf powder with cinnamon powder significantly affected polyphenol content and antioxidant activity but had no significant effect on water content and ash content. The higher the concentration of cinnamon powder, the higher the polyphenol content and antioxidant activity, and the darker the color. The best formula was treating 90% agarwood leaves with 10% cinnamon. The formula produced herbal tea with a polyphenol content of 28.52 mg/GAE g, and antioxidant activity of 78.02 ppm (strong).

Keyword: Antioxidant activity, Agarwood leaves, Cinnamon, Polyphenols, Herbal tea bags

FAT-002

The shelf Life Extension and Sensory Evaluation of Film Enriched with Velvet Tamarind Seed Extract for Chicken Sausage Wrapping

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Abstract

The objective of this research was to investigate the prolongation of the shelf life and conduct a sensory evaluation of a film that was enhanced with velvet tamarind seed extract, which was utilized for wrapping chicken sausages. The study conducted a comparison between chicken sausages that were wrapped and those that were not wrapped. The sausages were stored at two different temperatures: 4 °C and room temperature. Subsequently, the total number of bacteria was examined on days 0, 1, 2, 3, 4, 5, 6, and 7. The findings indicated that the use of edible film for wrapping had a substantial impact on reducing sausage deterioration. The statistical analysis, with a confidence level of 95% ($P<0.05$), revealed a 2.15-fold decrease in total bacterial counts at a temperature of 4 °C. The bacterial counts were 3.21 logarithm colony-forming units per gram (log CFU/g) on day 0 and 3.57 logarithm colony-forming units per gram (log CFU/g) on day 10. The sensory evaluation consisted of five distinct formulations of the edible film that were enhanced with velvet tamarind seed extract. The formulation with a ratio of cassava starch to glutinous rice starch of 5:0 and 15% glycerol achieved the highest overall approval. Moreover, this groundbreaking invention exhibits significant potential for future utilization in the food business. The sensory characteristics of the video were assessed using five distinct formulations for testing. The formulation using a ratio of cassava starch to glutinous rice starch of 5:0 and 15% glycerol had the highest overall approval. The findings suggest that including velvet tamarind seed extract in the film can significantly increase the durability of chicken sausages, making it a promising option for the food industry in the future.

Keyword: Chicken sausage wrapping, Edible film effectiveness, Shelf life prolongation, Sensory evaluation, Total bacterial, Velvet tamarind seed extract

FAT-003

Gelatin From Broiler Chicken Eggshell Membrane: Characteristics and Antioxidant Properties

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Abstract

Eggshell membrane is one of the livestock wastes which has the potential to be used as a raw material for gelatin production. Gelatin is extracted using the acid method. This research aims to identify the characteristics of gelatin from the broiler chicken eggshell membranes, including yield, water content, ash content, protein content, fat content, color analysis, soluble protein of gelatin based on pH, and antioxidant activity. The resulting gelatin yield was 21.35% with water, ash, fat, and protein content respectively 7.14%; 49.86%; 0.40%; and 5.96%. The color of the gelatin is bright white and solubility optimal at pH 8.9. It has antioxidant activity was 28.01% with an IC50 value of 1019.19 ppm and higher than gelatin from other sources. So this broiler chicken eggshell membrane has the potential to replace gelatin from other sources.

Keyword: Antioxidant, Broiler chicken, Characteristics, Eggshell membrane, Gelatin

FAT-004

The Effect of Drying Methods and Body Parts on The Qualities and Microbial Contamination of Dried Octopus (*Octopus Sp.*)

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Abstract

Octopus (Octopus Sp.) is one of the aquatic products that are widely found in Bengkulu Province. It contains high water and protein content so it easily deterioration and needs an appropriate treatment to extend its shelf life. This research aims to determine the effect of different drying methods and body parts on the qualities and microbial contamination of dried octopus. The drying methods were YSD-UNIB12 solar hybrid drying and direct sun drying. The octopus body parts were divided into five parts with different thicknesses of the body parts. The experimental design was Completely Randomized Design (CRD) with two factors. The first factor was drying methods and the second factor was body parts. The octopus body parts significantly affected the ash and fat contents. The interaction of drying methods and octopus body parts only affected the ash content. The TPC results were in the range from 8 . 10^5 to 43 . 10^5 Cfu/g exceeded the maximum limit of the SNI standard criteria at 1 . 10^5 Cfu /g.

Keyword: Drying, Solar hybrid drying, Octopus, Direct sun drying, YSD-UNIB12

FAT-005

Isolation of Fungal Species in Gelamai with Various Packaging in Storage

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Abstract

Gelamai is a semi-wet food tradition that is very susceptible to fungi growth due to the nature of the chemical content in it. The use of various varieties of gelamai packaging in the market is to extend the shelf life from fungi contamination. The objective of this research is to find out the isolated fungi on various types of gelamai packaging such as corn husks, areca nut fronds, polyethylene plastic, and oil paper. The methodology used in this research is by fungi isolation and microscopic observation. The results of fungi isolation from product of gelamai on 4 different packs were obtained by 24 isolates with 3 genus, 2 families and 2 orders from members of Ascomycetes and Zygomycetes class. The three genera of fungi are Aspergillus, Penicillium, and Mucor. Species of the Aspergillus genus obtained are Aspergillus fumigatus species, Aspergillus flavus and Aspergillus niger. Species of the Penicillium genus that were isolated were Penicillium chrysogenum and Penicillium implicatum. While the species of the genus Mucor that was successfully isolated was Mucor musedo.

Keyword: Fungi, Gelamai, Isolation, Packaging

FAT-006

Impact Bruising of Red Barangan Banana Fruits (*Musa acuminata* Colla) with Different Ripening Stages

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Abstract

Red Barangan banana fruits (Musa acuminata Colla) are very commercial and valuable for fresh market. Unfortunately these bananas are very easily damaged due to bruising during the harvest, post-harvest and marketing processes. This study aims to investigate bruising on this fruit with various levels of ripeness in the form of bruise resistance and minimum energy before bruising. A free falling object impact method with four different energies to produce bruises on fruit with five different levels of ripeness (P1, P2, P3, P4, and P5) was employed for experiment. Fifty bananas, with 10 each coming from five different levels of ripeness, were used in the experiment. Each fruit was subjected to impact with 4 different energy levels and the bruise volume for each energy level was averaged to find the bruise resistance and the minimum energy that causes bruising. The result showed that the bruise resistance values of P1, P2, P3, P4, and P5 were 13.89 x 10^{-3}; 6.12 x 10^{-3}; 2.50 x 10^{-3}; 1.80 x 10^{-3}; and 1.37 x 10^{-3} J/cm^3, respectively while the minimum energy before bruising of P1, P2, P3, P4, and P5 were 8.03 x 10^{-3}; 1.66 x 10^{-3}; 1.10 x 10^{-3}; 0.70 x 10^{-3}; and 0.56 x 10^{-3} J, respectively. The ripeness level significantly affected bruise resistance and minimum energy before the bruising ($P<0.05$) and these two parameters decreased exponentially with the advance of fruit ripeness.

Keyword: Bruise, Bruise resistance, Minimum energy, Red barangan banana, Ripening

FAT-007

Peel Splitting in Barangan Merah Banana (*Musa Acuminata* Colla) on Physical and Chemical Characteristics

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Abstract

A number of fruits occur physiological disorders which affect the quality of fruits. Banana is a climacteric fruit which is found disorder on their peel namely peel splitting. Peel splitting in bananas can happen due to physiological, genetic, or environmental factors during growth, development, and post-harvest storage. Banana peel splitting often reduces quality and causes losses for producers. This research aims to determine the effect of peel splitting on the physical and chemical characteristics of barangan merah banana. This research used an observational method. The data obtained were analyzed using t-test to determine differences in the physical and chemical characteristics of barangan merah banana peels which are splitting or unsplit. The results showed that peel splitting on barangan merah banana had a significant influence on texture, water contents, pH, total dissolved solids, lipid contents, and color (lightness, a, b, hue angle). On the contrary, peel splitting on barangan merah banana had impacted slightly on dimensions (length, width), weight loss, color (chroma), ash contents, and protein contents.

Keyword: Barangan merah banana, Chemical characteristic, Peel splitting, Physical characteristic

FAT-008

Physicochemical and Organoleptic Characteristics of Instant Seasoning for Palm Fruit Extract Curry using Foam Mat Drying Method

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Abstract

Palm fruit extract curry is a modified version of a traditional Nigerian dish known as Banga Soup. Nigerian Banga Soup is made using specific spices and ingredients that provide high nutritional value and strong antioxidant activity. Ingredients and spices used in Banga Soup include unique Nigerian leafy spices, chili, crayfish (*Procambarus zonangulus*), and vegetables. Indonesia has abundant spice resources with various unique flavours and characteristics. However, spices have high moisture content, making them perishable and unsuitable for long-term storage. Therefore, spices need further processes such as drying which add maltodextrin, namely foam mat drying method. This research aims to determine the effect of maltodextrin addition on the physical, chemical, and organoleptic characteristics of instant seasoning Palm fruit extract curry. The Design used in this research is Randomized Block Design (RBD) with a factor, it is maltodextrin concentration. The results showed that maltodextrin addition on instant seasoning Palm fruit extract curry had a significant influence on water contents, color, antioxidant activity, solubility, and organoleptic (appearance, color). On the contrary, instant seasoning Palm fruit extract curry had an impact slightly on an organoleptic (aroma).

Keyword: Banga soup, **F**oam-mat drying, Instant seasoning, Maltodextrin, Palm fruit extract curry

FAT-009

Combination of Sugarcane Bagasse Fiber and Pineapple Peel on the Acceptability and Moisture Content of Cassava Starch Based Biodegradable Foam

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Abstract

Biodegradable foam is an environmentally friendly packaging that is expected to reduce the use of Styrofoam, made from abundant natural raw materials such as starch and fiber. Cassava starch functions as a binder, while bagasse waste and pineapple peel have potential as natural fibers that can increase the acceptability of biodegradable foam. The purpose of this research is to determine the acceptability of biodegradable foam. This research uses a 1-factor Completely Randomized Design (CRD) with 5 treatments of a combination of bagasse fiber and pineapple peel fiber (P1 5%:25%; P2 10%:20%; 15%:15%; 20%:10%; 25%:5%) repeated 3 times using the baking process method. Data were analyzed using ANOVA with a significant level of 5% followed by Duncan's test. The combination of bagasse fiber and pineapple peel fiber significantly influenced the acceptability based on quality (color, aroma and texture) and based on the level of preference (color and texture), but did not significantly affect the acceptability based on the level of aroma preference. The higher the percentage of bagasse fiber, the better the quality of biodegradable foam, and the panelists liked it in terms of color, aroma, and texture.

Keyword: Baking Process, Biodegradable Foam, Cassava Starch, Pineapple Peel Fiber, Sugarcane Bagasse Fiber

FAT-010

Characterization of Bengkulu Accession Millet (*Setaria italica* L. Beauv) and Its Application in Flavor-Enhanced Roll Cakes

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Abstract

Jawawut (Setaria italica L. Beauv) is a type of cereal that supports food security in the era of climate change. One of the identified millet genetic resources is the Bengkulu accession millet. This study aims to characterize the physical properties of seeds, the physicochemical characteristics of millet flour, and to apply the flour in flavor-enhanced roll cakes processing. The research stages consist of millet seed characterization, preparation of millet flour, analysis of millet flour's physicochemical characteristics, application of millet in roll cakes, and sensory analysis of the roll cakes. The study used a Complete Randomized Design (CRD) with 5 treatments on roll cakes, each with 4 repeats. The treatments include F1 (wheat roll cake), F2 (millet roll cake with pandan flavor), F3 (millet roll cake with chocolate flavor), F4 (millet roll cake with durian flavor), and F5 (millet roll cake without flavor). The results showed that millet seeds are slightly round, have a greyed orange color, and a bulk density value of 0.840 g/ml. Meanwhile, the yield and bulk density of millet flour were 94.60% and 0.60 g/ml, respectively. Proximate analysis indicated that millet flour contains 9.62% water, 8.62% protein, 4.19% fat, 0.90% ash, 75.80% carbohydrates, 0.87% crude fiber, and 375.39 kcal of calories. Furthermore, the analysis of variance showed that the treatment of adding various flavors had a significant effect on the color, taste, aroma, and overall acceptance of millet roll cakes at a confidence level of 95% ($P<0.05$). Roll cakes with pandan flavor received the highest hedonic scores in terms of color, taste, aroma, and overall attributes.

Keyword: Bengkulu accession, Characterization, Millet, Roll cake, Setaria italica

FAT-011

Evaluating the Oil Absorption Efficiency of Bamboo Sheaths to Develop Natural, Safe, and Effective Oil Blotting Paper for Fried Foods

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Abstract

Consumption of fried foods often results in oiliness, negatively impacting health by increasing the risk of heart disease and obesity due to the accumulation of fats in the body. To address this issue, many people use commercially available oil blotting paper or tissues to reduce the oil content from fried foods. However, these products may contain harmful chemical residues. Therefore, developing a natural, safe, and effective oil-absorbing product is crucial. This study aims to evaluate the oil absorption efficiency of bamboo sheaths to reduce agricultural waste and increase their value. The study process involves grinding the bamboo sheaths, digesting the fibers by soaking them in lime water, thoroughly rinsing them, bleaching by soaking them in boiled garcinia juice and rinsing with clean water, drying them with a hot air dryer at 70 degrees Celsius, mixing the prepared bamboo sheaths with tapioca starch, pressing the mixture with a mechanical press, and testing the oil absorption capacity of the bamboo sheath oil absorption paper. The results show that regular oil blotting paper absorbs 0.07 grams of oil, thin bamboo blotting paper absorbs 0.09 grams, and thick bamboo sheaths absorb up to 0.21 grams of oil. This outcome indicates that bamboo sheaths can absorb oil three times better than regular oil blotting paper. Using bamboo sheaths to produce oil absorption paper not only helps reduce agricultural waste but also increases the value of bamboo, a readily available natural material. Furthermore, using bamboo sheaths is a safer and more environmentally friendly alternative since it does not contain harmful chemical residues. This study demonstrates the potential of developing natural materials that meet consumer needs for safe and effective oil reduction in fried foods. Therefore, using bamboo sheaths to produce oil absorption paper is an interesting and promising approach that should be further developed and commercialized.

Keyword: Adsorption, Bamboo Sheath, Oil absorption paper

FAT-012

Analysis of Customer Satisfaction Towards "Sale Pisang" Products of Lenisa MSME in Belitang Madang Raya District, East Ogan Komering Ulu Regency, South Sumatra

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Abstract

Bananas are one of the abundant agricultural products that can be consumed in various forms and preparations, one of which is grilled bananas known as "sale pisang". Well-prepared sale pisang holds a distinct satisfaction value among consumers. Consumer satisfaction was a key factor in maintaining and enhancing customer loyalty, crucial to the success of businesses such as Lenisa's Micro, Small, and Medium Enterprises (MSMEs). This study aimed to assess consumer satisfaction levels and identify desired attributes for sale pisang products at MSMEs Lenisa. Consumer satisfaction was measured using Importance Performance Analysis (IPA) and Customer Satisfaction Index (CSI). The research findings indicated that desired attributes for Lenisa's sale pisang products included packaging design, production license information, and expiration dates. Attributes needing to be maintained included sweet taste, appealing color (golden brown), long shelf life, product composition information, quality-appropriate pricing, and presentation. The Customer Satisfaction Index (CSI) calculation resulted in a satisfaction index of 0.71, indicating that consumers were satisfied overall with Lenisa's sale pisang products. Respondent satisfaction levels fell within the satisfied category based on the satisfaction level criteria, where a score of 0.66 – 0.80 denotes satisfaction.

Keyword: Customer satisfaction, Importance Performance Analysis, Lenisa MSMEs, Sale pisang

FAT-013

Physical, Chemical, and Organoleptic Properties Red Barangan Banana (*Musa Acuminata*) Salai Produced from Various Fruit Ripening Stages by Operating Ysd-Unib18 Hibrid Dryer with Biomass Heat Source

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Abstract

Red Barangan bananas are very are very commercial due to their distinctive taste, fragrant aroma, unique texture and attractive appearance. However, about 20% of the fruit harvested is not economically viable on the fresh fruit market so they need to be further processed. This research aims to explore the physical, chemical and organoleptic properties of banana salai produced from five ripening stages i.e. fruit fractions 3, 4, 5, 6 and 7 using the YSD-UNIB18 hybrid dryer operated by biomass combustion heat and a Completely Randomized Design employed in the experiment.The result showed a significant effect of ripening stages on the texture, colour, and pH by the quantitative test. However, ripening stages had no significant effect on final moisture and ash content. The more advanced ripening stage led to sucrose and pH enhancement. All the ripening stages achieved the standard of SNI 01-4319-1996, so it was easier to produce the Red Barangan banana salai by employing the dryer. Moreover, the fruit fraction 6 exhibited the most favourable product suggesting the optimum ripening stage to produce a premium Red Barangan banana salai.

Keyword: Banana salai Biomass, Hybrid dryer, Red Barangan banana, Ripening stage, Banana salai

FAT-014

Development of Wet Noodles (Aceh Noodles) Based on Mocaf (Modified Cassava Flour) with The Addition Provitamin a from Red Palm Oil Olein (RPOO)

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Abstract

Vitamin A deficiency (VAD) is a condition where the body's health is disrupted due to the body's need for vitamin A not being met. Based on data from the World Health Organization (WHO), more than 20 million children under five in Indonesia experience Vitamin A deficiency. One of the efforts to overcome the VAD problem is by providing food products that have natural sources of provitamin A. Food ingredients with high natural sources of provitamin A are Red Palm Oil Olein (RPOO). The β-carotene content in RPOO is 500-1000 ppm. One food product that has the potential to be fortified is wet noodles. Wet noodles are a product made from the main raw material of wheat flour. However, noodles are often classified as an unhealthy food, because noodles have a very high carbohydrate content, but are low in protein, fiber, minerals and vitamins. The aim of this research is to determine the effect of adding RPOO on the physical, chemical and organoleptic characteristics of wet noodles. The research method used was a Completely Randomized Design (CRD) with 1 factor, consisting of 5 treatment levels, namely the addition of 0%, 25%, 50%, 75% and 100% RPOO. The research results showed that the addition of RPOO had a significant effect on the color, water absorption capacity, strain index, provitamin A levels, antioxidant activity and organoleptic acceptability of wet noodles. However, it has no real effect on the water content of wet noodles. The higher the addition of RPOO, the more yellow the resulting color will be, the water absorption capacity will decrease, the stretch index (elasticity) will decrease, the provitamin A levels will increase and the antioxidant activity will be stronger.Based on organoleptic tests, the addition of 75% RPOO was preferred by panelists with provitamin A levels of 68.09 µgRE which met the vitamin requirements of 10.48% in adult men and 11.35% in adult women.

Keyword: Provitamin A, RPOO, Vitamin A deficiency, Wet noodles

FAT-015

Effect of Camparison of Purple Sweet Potato (*Ipomea batatas* L.), Red Bean (*Vigna angularis*) and Maizena Flour on The Characteristics of Snack Bars

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Abstract

Snack bars are a type of functional food that is practical and has the potential to provide health benefits beyond just their basic nutritional value. Snack bars include long-lasting food to store and also snacks that are practical and well-liked. Cornstarch is used to improve the texture and stability of snack bars. This study aims to determine the effect of the comparison of purple sweet potato flour, red bean flour, and cornstarch on the physical and organoleptic characteristics of snack bars. This study used the Factorial Group Random Design (RAK) method with Factor I including the comparison between purple sweet potato flour and red bean flour (T) in three levels of treatment: T1 (70% : 30%), T2 (60% : 40%), and T3 (50% : 50%). Factor II is the addition of cornstarch with two levels of treatment: M1 (5%) and M2 (10%). Each treatment was repeated three times, so there were 18 experimental units in this study. The results showed that the comparison of purple sweet potato flour, red bean flour and cornstarch had no real effect on the moisture content, texture, and organoleptic of snack bars.

Keyword: Cornstrach, Purple sweet potato, Red beans, Snack bar

FAT-016

Analysis of Antioxidants, Color, Moisture Content of Coffee Noodles using Coffee Extract and Powder

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Abstract

Coffee in addition to being consumed as a beverage, can be developed into an innovative product, namely coffee noodle products. The development of coffee noodle products is not only aimed at varying food products but also maximizing the health benefits contained in coffee. This study aimed to analyze the antioxidant content, color, and moisture content of coffee noodles made using coffee extract and powder. The research method involved making noodles with two variations of additional ingredients, namely coffee extract and coffee powder. Each noodle sample was then analyzed to measure antioxidant content using the DPPH (2,2-diphenyl-1-picrylhydrazyl) method, color measurement using a colorimeter, and moisture content measurement using the gravimetric method. The test result data was analyzed using t-test. The results show that coffee noodles using coffee extract has a weaker antioxidant content compare to noodles using coffee powder (1105.889ppm: 665.619ppm) with a significant value of 0.001. The results of the color analysis of coffee noodles using coffee extract and powder have a significant effect with a value of 0.001. The color of the extracted coffee noodles tends to have a darker and more uniform color, while noodles with coffee powder show greater color variations. Moisture content analysis shows that both types of noodles have moisture content within the safe limit for dry noodle products, but noodles with coffee powder have a slightly higher moisture content (4.5% : 5.5%) with a significance value of 0.021. The study conclude that the use of coffee powder in making coffee noodles is more effective.

Keyword: Antioxidants, Color, Moisture Content, Cooffee Noodles

FAT-017

Development of Eco-Friendly Clay Roof Tiles Enhanced with Coconut Coir Fibers and Fly Ash

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Abstract

This study explores the potential of clay roof tiles reinforced with coconut coir fibers and fly ash for enhanced carbon dioxide (CO_2) adsorption. The main objectives were to determine the optimal ratio of coconut coir fibers and fly ash, Compare the CO_2 adsorption performance of these composite tiles with conventional roof tiles, and analyze how tile density and porosity affect CO_2 adsorption. The findings revealed a significant increase in CO_2 adsorption as tile density decreased and porosity increased. The composite tiles exhibited an impressive average CO_2 adsorption rate of 92.21 ± 2.42%, compared to 34.12 ± 1.43% for conventional tiles. Statistical analysis confirmed that the composite tiles had a significantly higher CO_2 adsorption capacity than conventional tiles ($p < 0.05$). Notably, composite tiles with a density range of 0.29-0.31 g/cm³ demonstrated the highest CO_2 adsorption capability. These results underscore the promise of using coconut coir fibers and fly ash in clay roof tiles as an eco-friendly solution for carbon capture. Optimizing the composition of these tiles could lead to sustainable building materials that effectively mitigate CO_2 emissions while utilizing renewable resources and industrial by-products.

Keyword: Clay roof tiles, Coconut coir fibers, Fly ash, CO_2 adsorption, Sustainable building materials

FAT-018

Development of Grass Jelly Product Supplemented with Cucumber Enzymes to Enhance Fat Degradation Efficiency

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Abstract

This study aimed to investigate the optimal ratio of cucumber enzyme puree to enhance fat digestion in jelly cendol. The research involved testing four different concentrations of cucumber puree: 25%, 50%, 75%, and 100%. The primary objective was to evaluate the effect of varying enzyme concentrations on the physical properties, sensory characteristics, and consumer acceptance of the jelly cendol. The results demonstrated that increasing the enzyme concentration led to higher levels of soluble solids and improved brightness values. Specifically, the sensory evaluation revealed that jelly cendol with 85% cucumber enzyme puree was highly favored, receiving scores ranging from moderately liked to very much liked, with statistical significance ($p \leq 0.05$). The optimal formulation identified in this study comprised 29.9% cendol, 10.0% cucumber enzyme puree, 39.9% sucrose, 8.0% glucose syrup, 6.4% powdered beef gelatin, 1.1% citric acid, and 1.8% fine granulated sugar for coating. The physical analysis of the final product revealed color values of L* = 17.67, a* = 8.61, and b* = 12.34, a moisture content of 2.62%, a total solids content of 72.33%, and a pH of 6.3. Importantly, consumer acceptance testing indicated that 95% of participants expressed a willingness to purchase the jelly cendol with cucumber enzyme puree, and their overall liking was rated as very much liked. These findings highlight the potential of cucumber enzyme puree as a valuable ingredient in jelly cendol to enhance fat digestion and improve sensory qualities, leading to high consumer satisfaction. The study underscores the importance of optimizing ingredient ratios to develop functional foods that meet both health and sensory expectations. The successful integration of cucumber enzyme puree into jelly cendol not only provides a method for enhancing fat digestion but also offers a marketable product that appeals to health-conscious consumers. The high levels of consumer acceptance and the improved physical properties of the jelly cendol suggest that this innovative formulation can be effectively positioned in the market as a desirable and functional food product.

Keyword: Grass Jelly, Cucumber Enzyme Supplementation

FAT-019

Study on the Efficacy of Mangosteen Peel Extract in Lightening Dark Lips and Enhancing Moisturization

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Abstract

This study investigates the effectiveness of lip care products formulated with mangosteen peel extract for brightening dark lips, comparing them with conventional lip care products. Mangosteen peel is rich in antioxidants such as α-mangostin, flavonoids, and tannins, which can inhibit melanin production by up to 70%, thereby lightening dark spots. Additionally, mangosteen peel extract demonstrates stronger antioxidant activity than ascorbic acid, which is crucial for protecting lips from oxidative stress and aging. The anti-inflammatory and antimicrobial properties of mangosteen peel extract also promote wound healing and reduce irritation, making it suitable for sensitive skin. Research indicates that these properties can enhance wound healing by 50%, beneficial for chapped or damaged lips. Clinical tests have shown that products containing mangosteen peel extract improve skin hydration by 40%, contributing to softer and more supple lips. To enhance the moisturizing effect, our formulation includes cucumber extract and aloe vera. Cucumber extract can improve skin hydration by 40%, while aloe vera enhances wound healing and provides soothing effects. Comparative studies reveal that lip balms with mangosteen peel extract are 60% more effective in reducing dark spots and brightening lips compared to general lip care products. Furthermore, the lip care product is designed for people with sensitive skin, utilizing all-natural extracts to minimize irritation. The addition of essential oils and pleasant scents reduces potential irritation, making the product suitable for a broader audience. The formulation is pH-balanced and stable, ensuring long-term effectiveness and safety for users.

Keyword: Aloe vera, Cucumber, Mangosteen peel, Pomegranate peel

SCOPE 4
ANIMAL PRODUCTION, NUTRITION, AND INDUSTRY

APN-001

Silver Nanoparticles: The Impact of the Synthesis Duration when Utilizing *Morinda citrifolia* linn. Leaf as a Reductant on The Morphology of Particles

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Abstract

Noni leaves (Morinda citrifolia Linn.) have potential as reducing agents in the process of forming silver nanoparticles because they contain active secondary metabolite compounds. This study aims to examine the possibility of using non-leaf extract-reducing agents in the context of the synthesis of silver nanoparticles (AgNPs). This methodology involved a combination of various percentages of 15% noni leaf extract and 85% 1 mM AgNO3 solution. The mixture was then incubated at 80°C for 60–120 min. The results showed that the best synthesis of AgNPs took 120 min with a diameter of 95.27 nm, zeta potential -24.60 mV, and uniform polydispersity index (PI) with a value of 0.351. Thus, these findings indicate that the combination of 15% noni leaf extract and 85% AgNO3 synthesised for 120 min had a nanoparticle size. Thus, these findings indicate that the combination of noni leaf extract and AgNO3, which was incubated for 120 min, had nanoparticle size.

Keyword: Noni Leaf, Silver Nanoparticles, Synthesis, Secondary Metabolite

APN-002

Formulation and Characterization of Nanoemulsion Fingerroot (*Boesenbergia pandurata*) Essential Oil using D-Optimization Design for Feed Additive in Poultry

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Abstract

Fingerroot essential oils have potential antimicrobial. This study aimed to determine the likely best formula for the self-nano emulsifying drug delivery system (SNEDDS) and the characteristics of fingerroot essential oil. The SNEDDS formula was determined using the D-optimization design based on the volume of each ingredient composed. The study material consisted of fingerroot essential oil, Tween 80, polyethylene glycol (PEG) 400, and virgin coconut oil (VCO). SNEDDS was formed of the fingerroot's bioactive compounds, Tween 80 as the surfactant and PEG 400 as the cosurfactant. The optimal formula was evaluated based on the transmittance and emulsification time. Parameters such as particle size, zeta potential, polydispersity index, and pH of the SNEDDS were observed to characterize the essential oil's potency. The results obtained from the study showed that SNEDDS optimum formula of fingerroot essential oil, carrier oil (virgin coconut oil), surfactant (Tween 80), and cosurfactant (polyethylene glycol 400) were 12.61, 12.61, 53.65, 21.12%, respectively. The SNEDDS formula has a droplet diameter of 22.92 nm, zeta potential of -22.92 mV, polydispersity index (PI) of 0.402, and pH value of 5.80. Thus, these findings reveal that fingerroot essential oil has a nanoparticle size and might be a suitable feed additive in poultry diets.

Keyword: Antimicrobial, Fingerroot Essential Oils, Nanoemulsion, Poultry

APN-003

The Effects of Feeding Commercial Feed on Growth and Mortality of Balitbangtan-Bred Chicken During the Starter Phase

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Abstract

Produced by Balitbangtan, Indonesia Kampung Unggul Balitbangtan (KUB) chicken was designated over six generations from a variety of native chickens that originated in Cianjur, Depok, Majalengka, and Bogor. KUB hens are designed for both broiler and layer farming. This chicken has never been reared at the University of Bengkulu. Primarily, no commercial feed has been generally used for local chicken feeding management for economic reasons. The study aimed to analyze the performance of feed consumption, body weight, FCR, and mortality rate of mixed-sex KUB chicks during 28 days of an intensive rearing phase. The research was conducted at the Commercial Zone of Animal Laboratory (CZAL) Department of Animal Science, Faculty of Agriculture, University of Bengkulu Indonesia. 100 KUB chicks were used in this study—variables collected weekly, tabulated, and calculated for average, standard deviation, and coefficient of variation. Results showed the average body weight was 7.351,25 ± 2.893,37 g/chick; the average feed consumption was 190.16 g/chick/day, the average FCR was 2.45, and the mortality rate was 0%. It can be concluded that mixed-sex KUB chicks' body weights were increased, similar to their increased feed consumption, resulting in zero mortality. However, feeding them with commercial feed seems less efficient based on their FCR ≥ 1.

Keyword: Commercial Feed, Growth, Kub Chicken, Mortality

APN-004

In Vitro Characteristics of Concentrate Containing Fermented *Arenga pinnata* by-product

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Abstract

This study aimed to evaluate the inclusion of concentrate containing fermented Arenga pinnata by-product as a substitution for rice bran on rumen fermentability, digestibility, and total microbial population in vitro. This experiment applied Completly Randomized Design, consisted of 4 treatments with 4 replications. The treatments were ASAF0: fermented A. pinnata by-product; ASAF10: Concentrate with 10% fermented A. pinnata by-product; ASAF15: Concentrate with 15% fermented A. pinnata by-product; ASAF20: Concentrate with 20% fermented A. pinnata by-product. The parameters tested were pH, ammonia concentration (NH3), total VFA, Dry Matter Digestibility, Organic Matter Digestibility, total bacterial population, total protozoal population, and total methane gas production. Data were analyzed using Analysis of Variance (ANOVA), and treatments that differed significantly were further tested with Duncan's Test using SPSS 23 software. The results showed that the treatments did not have a significant effect (P>0.05) on pH value, total VFA, Dry Matter Digestibility, Organic Matter Digestibility, and total bacterial population. However, significant differences (P<0.05) were observed in NH3 and protozoal population. The conclusion of this study is that concentrate with fermented A. pinnata by-product up to 20% usage level can replace rice bran, as indicated by no effect on rumen fermentability, digestibility, and total rumen microbial population.

Keyword: A. Pinnata By-Product, Fermentation, In Vitro

APN-005

Effect of Sakura Block Enriched with Eathworm on Increasing Branched Fatty Acid and Populations of Bacteria in Palm Frond Rations

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Abstract

The aim of this study was to obtain the level of sakura enriched with earthworms as supplementary feed in palm frond rations in optimizing Branched Fatty acid (BCFA) and populations of bacteriatra. The treatment ration consisted of P0= Palm frond ration + 10% commercial sakura block, P1 = Palm fronds rations + 6% sakura block enriched with earthworms, P2 = Palm frond rations + 8% sakura block plus earthworms, P3 = Palm frond rations + 10 % sakura block enriched with earthworms, P4 = palm frond rations + 12% sakura block enriched with earthworms. P5 = palm frond rations + 14% sakura block enriched with earthworms. Increased concentrations of BCFA, isovalerate and populations of bacteria were produced in the treatment treated with sakura block enriched with earthworms. The higher the level of treatment with sakura blockenriched with earthworms, the higher the concentration of BCFA and isovalerate. However, the palm frond rations with supplementation of 12% sakura block enriched with earthworms was able to increase the total bacteri rumen which was better than other treatments.

Keyword: Branched fatty acids, Earthworms, Palm frond rations, Populations of bacteria, Sakura block

APN-006

Black and White Pepper and Its Effect on Feed Digestibility and Efficiency on PE Goats

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Abstract

The experiment aimed to evaluate the supplementation of Black and White pepper on nutrient intake and digestibility of PE goats. Twenty-five PE goats were randomly assigned to five feeding groups of five animals each: T1: Herbs (*Curcuma longa + Melastoma malabatrichum*) T2: Herbs + black pepper, T3: Herbs + white pepper and T4: Herbs + black pepper + white pepper. The parameters measured were feed intake, digestibility, Average Daily Gain (ADG), intake of digestible nutrients, Feed Conversion Ratio (FCR), and FE (Feed Efficiency). All data were analyzed using ANOVA and continued with Duncan's Multiple Range Test to see the difference among the mean for ADG. Orthogonal contrast was used to evaluate the effect of supplementation on feed intake, digestibility, intake of digestible nutrients, FCR, and feed efficiency. Results revealed that except for crude protein, feed intake (g/day) was considerably higher in a supplementation group based on orthogonal contrast. All treatments had greater feed consumption per metabolic BW, %BW as well as intake of digestible nutrients. Supplementation did not affect dry matter, organic matter, crude protein, crude fiber, ether extract, and energy digestibility, as well as FCR and FE. The ADG of T4 was significantly higher than those of all other treatments. In conclusion, the combination of herbs and black/white pepper increased feed intake and ADG, while not influencing nutrient digestibility and FCR and FE.

Keyword: *Curcuma longa,* Goat, *Melastoma malabatricum,* Palm Oil Sludge, Pepper

APN-007

Effect of Herbs and Black or White Pepper on Fecal Characteristic and Lactic Acid Bacteria in PE Goat Effect of Herbs and Black or White Pepper on Fecal Characteristic and Lactic Acid Bacteria in PE Goat

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Abstract

The ban on the use of antibiotics in animal feed has increased the use of phytobiotics, which are natural medical medicines manufactured from herbs. Herbs could stimulate the development of the intestinal microbiota. Our study aimed to investigate the effect of herbs on Lactic Acid Bacteria in faecal PE (Peranakan Ettawa) goats. Twenty-five PE goats were randomly assigned to five feeding groups of five animals each: T0 = Control (No herbs), T1 = *Curcuma longa + Melastoma malabatrichum,* T2 = *Curcuma longa + Melastoma malabatrichum* + White pepper, T3 = *Curcuma longa + Melastoma malabatrichum +* Black pepper*,* T4 = *Curcuma longa + Melastoma malabatrichum +* White pepper *+* Black pepper. Results showed that treatments influence pH and faecal score. Based on the Pearson correlation there was a correlation between fecal pH and fecal score as well as lactic acid bacteria, and the pH optimum for the development of lactic acid bacteria was about 6.9-7,3

Keyword: Curcuma, Goat, Faecal score

APN-008

Food Safety of Cilok and Meatballs Sold Around Schools in Surakarta: Investigation of the Use of Borax and Formalin

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Abstract

Cilok and Bakso are popular traditional snacks marketed extensively in Surakarta, often near elementary and junior high schools. Concerns have been raised about the possible use of harmful additives such as borax and formalin to enhance the texture and preservation of these snacks. This study aimed to investigate the presence of borax and formalin in Cilok and Bakso sold near schools in six districts of Surakarta. Samples were collected from vendors selling in front of elementary and junior high schools, with two samples taken from each location, resulting in a total of twelve samples. Both qualitative and quantitative tests were conducted to detect the presence of borax and formalin. The analysis showed no presence of borax or formalin in any of the samples tested. Vendors reported using tapioca flour to enhance the springiness of the snacks, reflecting an awareness of the health risks associated with borax and formalin. The study concludes that nearly all traditional snack vendors in Surakarta are aware of the dangers of using borax and formalin, opting instead for safer alternatives like tapioca flour to improve the texture of their products. This awareness is a positive step towards ensuring food safety for schoolchildren consuming these snacks.

Keyword: Cilok and Bakso, Borax and Formaline, Food savety

APN-009

The Effect of *Sauropus androgynus* Leaves Powder on Feed Intake, Hematological and Blood Biochemical Status in Laying Kampung Chickens

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Abstract

This study aimed to evaluate the effect of *Sauropus androgynus* leaves powder (SALP) on the hematological and blood biochemical status of laying native chickens. Forty laying native chickens were distributed into 4 treatments, namely: P1 = laying native chickens were fed rations without SALP (0%, control); P2 = laying native chickens chickens fed rations with 4% SALP; P3 = laying native chickens chickens fed rations with 8% SALP and; P4 = laying native chickens chickens fed rations with 4% SALP. Feeding SALP had no effect on feed intake and protein intake (P>0.05), but it significantly increased dietary iron intake (P<0.01). Furthermore, the SALP had no significant effect (P>0.05) on Hb, leukocytes, hematocrit, erythrocytes, thrombocyte, protein and albumin concentartion, but it had a very significant effect (P<0.01) on triglyceride concentration in laying native chickens. . It could be concluded that the administration of SALP did not change the hematological status, feed intake, and protein intake but increased the blood triglyceride concentration and dietary iron intake in laying native chickens.

Keyword: Dietary iron intake, Hematological status, Laying native chicken, *Sauropus androgynus* leaves, Triglycerides

APN-010

Test the Production Performance of Broiler Chicken with Partnership System Based on Production Factors

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Abstract

The aim of this research is to test the production performance (performance index) of broiler chickens based on production factors, such as the number of broiler chicken populations (tails), the amount of feed (kg), depletion (tails), the number of harvests (tails), average weight harvest (kg), and Feed Convertion Ratio (FCR). This research involved 55 broiler chicken farmers with a core plasma partnership system operating in December 2023 – January 2024. Research variables included production factors from broiler chicken performance, performance index, and farmer income. Data analysis uses multiple linear regression to determine the factors that influence the broiler chicken performance index value, and correlation analysis to examine the relationship between the performance index and farmer income. The research results showed that the performance index value was significantly positively influenced by the number of harvests of 2,281 and the average harvest weight of 2,411, but was also significantly negatively influenced by the amount of feed of -1,806, depletion of -2,145, and FCR of -2,089. Apart from that, there is a very strong correlation between the performance index and farmer income of 0.914. The research conclusion was that the amount of feed (kg), depletion (tails), number of harvests (tails), average harvest weight (kg), and FCR greatly determine the performance index value of broiler chicken farming. Apart from that, the higher the performance index value, the greater the income of broiler chicken farmers.

Keyword: Broiler, Partnership system, Performance index, Plasma core partnership, Production factors

APN-011

Actor and Institution in Laying Hens Farming on Blitar Regency, East Java

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Abstract

Climate change and ecological politics involve local, regional, and global players with their own strategic roles and vantage points. The positions may overlap and result in conflicts of interest at both the actor and institution levels. The interests of players and institutions involved in layer chicken significantly affect independent farmers. This study intends to examine the actors and institutions in Blitar Regency, East Java, and Layer Chicken Farms. This qualitative study was conducted in Blitar Regency, one of the centers for layer chicken farms, and the research location was picked on purpose. Interviews, observation, and documentation were used to collect data, which was then analyzed using an interactive analysis model. Independent farmers, partner farmers, poultry shops, investors, marketers, government officials, service offices, and cooperative management were interviewed for this study. Data validation was performed using data source triangulation. According to the study, three major players are in the layer hen sector (investment, farmer, processor, supplier, and market) and three institutions (upstream, on-farm, and downstream). Independent farming is commonly practiced by Blitar's farmers, increasing the price of Day of Chicken (DOC). This condition has a negligible impact on farmers who form partnerships with giant corporations, from the supply of DOC, feed, and medicine through harvest absorption. The presence of people and institutions fosters cooperation and rivalry in providing care, feed, and even the sustainable commercialization of eggs.

Keyword: Actor, Actor relation, egg production, Independent farmers, Laying hens

APN-012

Performance of Male Bayang Ducks Reared at Different Altitude and Energy Levels

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Abstract

This study aims to determine the interaction between altitude and energy levels of different rations on the performance of male Bayang ducks. This study used 120 male Bayang ducks aged 1 week. The method used in this research is experimental method 2x3 split plot design experiment with 4 replications. The Main Plot consists of 2 altitudes (Medium and Lowlands) and the Sub-plots consist of ration energy levels (2700, 2900, 3100 Kcal/Kg). The variables observed were feed consumption, body weight gain (BWG),feed conversion and IOFC (income over feed cost). The results of this study indicate that there is no interaction (P> 0.05) between altitude and energy levels on feed consumption, BWG,feed conversion. Altitude was very significant (P<0.01) affecting feed consumption and not significantly (P>0.05) affecting BWG and feed conversion. The energy level of the ration was very significant (P<0.01) affecting the feed consumption of the ducks and had no significant effect (P>0.05) on the BWG and the feed conversion of the male Bayang duck ration. The best IOFC is obtained at the energy level of 2900 with a profit value of Rp. 13330. Based on the results of this study, it can be concluded that to get a good body weight gain is on a medium plain with a ration energy level of 2900 Kcal/kg.

Keyword: Altitude, Bayang Duck

APN-013

Impact of Protected Fat Supplementation on Dairy Performance, Energy Balance, and Blood Metabolites in Early Lactation: A Meta-analysis

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Abstract

Protected fat provides an efficient energy supply due to its high energy density and low heat increment, which can potentially improve the negative energy balance during early lactation. However, its effects on dairy performance have shown inconsistent results. This meta-analysis evaluated the effects of protected fat supplementation in early lactation dairy cows on dairy performance, energy balance, and blood metabolites. Fourteen articles were selected for the meta-analysis, integrating 31 data points into the database. The data were analyzed using the random effects meta-analysis method, with effect size calculation based on Hedges' d. The observed parameters included dry matter intake, nutrient digestibility, body weight (BW) and body condition score (BCS) changes, milk yield and composition, energy balance, and blood metabolites. The results showed that the mean dry matter digestibility and BW change in the treatment group were 67.66% and 153.17 g, respectively, significantly higher than the control group at 65.90% and 60.47 g ($p<0.05$). Additionally, Non-Esterified Fatty Acid (NEFA) level in the treatment group was 0.45 mmol/L, significantly lower than the control group at 0.54 mmol/L ($p<0.01$). However, there was no significant effect on energy balance. In conclusion, protected fat supplementation improved dairy performance and body reserves in early lactation without significantly affecting energy balance.

Keyword: Body reserves, Dairy cows, Early lactation, Energy, Protected fat

APN-014

Macro Mineral Content of Selected Tropical Dairy Cow Feedstuffs as a Basis for Dietary Cation-Anion Difference Calculation

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Abstract

Dietary Cation Anion Difference (DCAD) can be used as an instrument to regulate blood pH to optimize parathyroid hormone (PTH) function in regulating Calcium (Ca) release from bone, increasing Ca absorption from intestine, and Ca reabsorption from kidney. Unfortunately, the data were limited for use in dairy cattle ration formulations. An attempt to analyze the macro minerals of selected tropical dairy cow feedstuffs as a basis for DCAD calculation has been done. The amounts of 232 feedstuffs consisted of grasses (n = 69), roughage (n = 52), and concentrate (n = 111) were collected from cattle central areas in West Java. The macro mineral contents of the feedstuffs, including Na, K, Cl, S, P, Ca, and Mg, were analyzed using atomic absorption spectrophotometer, spectrophotometer, or titration. The results showed that the average contents of Na, K, Cl, S, P, Ca, and Mg in grasses were 0.23%, 0.23%, 0.34%, 0.54%, 0.37%, 0.86%, and 0.18%, respectively, while for roughage, the values were 0.19%, 0.20%, 0.23%, 0.56%, 0.27%, 0.78%, and 0.19%, respectively, and for the concentrate, the macro mineral contents were 0.24%, 1.03%, 0.25%, 0.41%, 0.58%, 1.01%, and 0.21%, respectively. The DCAD calculation of the groups showed a tendency for acidic properties in the major grasses and roughage, while the concentrate tended to be alkaline. The macro mineral database provided by this research can be made available to farmers to adjust their ration DCAD during the transition period for better prevention of Ca drop in early lactation.

Keyword: Concentrate, DCAD, Forage, Mineral content, NIRS

APN-015

Enhancement of Body Size in Male Bayang Ducks with Different Energy Levels and Raised at Different Altitudes

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Abstract

This study aims to determine the enhancement of body size in male bayang ducks with different energy levels and raised at different altitudes. This study used 120 male Bayang ducks aged 1 week. The cages used were box cages measuring 60 cm x 50 cm x 75 cm as many as 24 units.The method used in this research is experimental method 2x3 split plot design experiment with 4 replications. The Main Plot consists of 2 altitudes (Medium and Lowlands) and the Sub-plots consist of ration energy levels (2700, 2900, 3100 Kcal/Kg). The data obtained were analyzed by analysis of variance. The variables observed were growth rate, beak length, neck length, back length, thigh length, tibia length, shank length, beak width and chest circumference. The results showed that the growth rate in lowland (0.261) was higher than mediumland (0.257). There was no significant interaction ($P>0.05$) between altitude and ration energy level on growth rate, beak length, neck length, back length, thigh length, shank length, beak width and chest circumference, there was interaction ($P<0.01$) on tibia length, where in DS the average tibia length (97.75 mm) was lower than DR (105.48 mm). Energy level had no significant effect ($P>0.05$) on the observed variables, while altitude had a very significant effect ($P<0.01$) on the observed variables. The conclusion obtained was that the best treatment was with an energy level of 2700 kcal, 2900 kcal, and 3100 kcal in the lowlands.

Keyword: Altitude, Body size, Male Bayang duck

APN-016

Increasing Meat Productivity and Quality of Indonesian Chickens by Genetic Quality Improvement

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Abstract

Indonesian chicken (native and local) has a great chance to improve in the development to better quality. Indonesian local chicken contributes to the economic stability and income value of the community, especially rural communities, and is a means of realizing food self-sufficiency. The genetic diversity of Indonesian chickens is a precious asset which has yet to be optimized for national livestock development. Indonesian chickens are very diverse, but their genetic potential has not been fully utilized. This chicken has low productivity, but it contributes greatly to the rural economy. The potential development of native chicken is considered suitable to be associated with the issue of food security and food self-sufficiency. Performance and productivity information on Indonesian chickens is essential for local chicken development. Improvement of productivity and development of Indonesian chickens can be done effectively through breeding programs i.e., selection and crossbreeding. In addition, the quality of local chickens can also be increased through improved feeding management. Advanced technology of RNA Sequencing can identify potential candidate genes and SNPs rapidly, thoroughly and comprehensively, as biomarkers to improve productivity (egg production, growth rate) and meat quality (tenderness, flavor, meat fiber and fatty acid composition). Several studies have been done on genes associated with diverse traits such as meat production (growth hormone receptor (GH-r), growth hormone secretagogue receptor (GHSR) genes); meat quality (calpastatine (CAST), calpain (CAPN) and myostatin (MSTN) genes); and composition of fatty acids (stearoyl CoA desaturase (SCD) and salute carrier (SLC) genes). Increasing the production and quality of Indonesian chicken meat can be done by improving genetic quality to establish a chicken industry in Indonesia.

Keyword: Indonesian Chickens, Genetic Quality Improvement, Meat Productivity, Meat Quality

APN-017

Dietary Effects on Rumen Morphometry and Blood Metabolites in Bali Cattle: A Study of Natural Grass and Palm Oil

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Abstract

This study was designed to explore the rumen morphometric adjustments and blood metabolites of Bali cattle, an indigenous Indonesian breed, following two different dietary treatments: T1 100% natural grasses and T2 40% palm sludge + 60% natural grasses. The animal model used was 20 Bali cattle weight 240,47 ±11,37 kg. The cattle had free access to drinking water. The diets were given twice a day 10% of body weight. At the end of the research, the blood sample was collected through the coccygeal vein using a vacutainer for metabolite measurements. Total protein was measured using a photometric calorimetric test, and enzymatic colorimetric tests were conducted to analyse triglyceride and glucose. Halal slaughtering was applied and rumen samples were taken from both the dorsal and ventral regions of 10 Bali cattle for each dietary group at the end of the experiment, the samples were fixed in 10% formalin buffer for 24 hours for histological analysis. A t-test was applied to compare the means between the two groups of treatments. Blood triglycerides and total protein of cattle in palm oil sludge group feeding treatment were significantly higher than cattle fed with 100% natural grass ($P<0.05$). The glucose levels of cattle in all treatment groups showed similar results ($P>0.05$). An observation of the gross anatomy of the rumen displayed healthy rumen tissues with uniform papillae and a similar rumen wall colour. In terms of rumen morphometry, feeding palm sludge and natural grass altered the depth of the crypt in the dorsal area and the depth of the crypt and dorsal papillae height ratio ($P< 0.05$). In conclusion, feeding palm oil sludge leads to an increase in blood triglycerides and total protein, however, a 100% natural grass diet supported a higher depth of crypt and ratio of crypt and papillae height

Keyword: Bali cattle, rumen morphometry, blood metabolites, natural grass, palm oil sludge

APN-018

Inclusion of Moringa Leaf Extract (*Moringa oleifera* L) in Drinking Water on Broiler Fat Deposition

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Abstract

This study aims to evaluate the effect of administering extracts with 70% ethanol from Moringa leaves as a *feed additive* in drinking water against broiler fat deposition. The research design used in this study was a Completely Randomized Design (CRD) with 4 treatments and 5 replications, each replication consisting of 8 broilers. The differentiating factor used is the level of Moringa leaf extract, namely P0: Drinking water without Moringa leaf extract, P1: 0.45 g of Moringa leaf extract in 1 L of drinking water, P2: 0.90 g of Moringa leaf extract in 1 L of drinking water, P3 : 1.35 g of Moringa leaf extract in 1 L of drinking water. The variables observed were the percentage of abdominal fat, proventriculus fat, ventricular fat, heart fat, neck fat, sartorial fat, total fat and *fatty liver score* broilers. The results showed that the percentage of abdominal fat, proventriculus fat, ventricular fat, heart fat, neck fat, sartorial fat, total fat, and *fatty liver score* no significant effect (P>0.05). The results of this study can be concluded that administering Moringa leaf extract in drinking water at a level of 0.45 g to 1.35 g cannot reduce the percentage of abdominal fat, proventriculus fat, ventricular fat, heart fat, neck fat, sartorial (thigh) fat, total fat. And *fatty liver score* broiler.

Keyword: Broilers, *Feed Additive,* Moringa Leaf Extract, Fat Deposition

APN-019

Indonesian Traditional Herbal Medicine to Enhance Body Weight Gain Recovery of Bali Cattle After Experiencing Long-Transportation Stress

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Abstract

In Jambi Province, the supply of Bali cattle are still being imported from outside of the region, such as Kupang (East Nusa Tenggara). Those cattle required to travel and spend extended time on the road for a period of time typically will lose 10% to 20 % of their body weight. Body weight loss will cause losses for the farmers, hence a method of recovery needs to be implemented to prevent it. One of the solutions to address this issue is by giving Indonesian Traditional Herbal Medicine (ITHM) which is made from concentrate from various spices. The aim of this study was to determine the optimum level of ITHM in concentrate to be able to increase the daily body weight of the Bali cattle In this research, for twelve male Bali cattles, age of 2.5 to 3.5 years, weighing an average of 250 kg, we used a Randomized Block Design (RBD) with four treatments in three body weight groups as replicates. The following combinations of treatments are available: T_0 (Kumpai grass + concentrate without "ITHM"), T_1 (Kumpai grass + concentrate + 100 ml "ITHM"), T_2 (Kumpai grass + concentrate + 150 ml "ITHM"), and T_3 (Kumpai grass + concentrate + 200 ml "ITHM"). The observed variables were the ratio of dry matter intake (DMI), the ratio of protein consumption (RPc), Daily Body Weight Gain (ADG), and ratio utilization efficiency (EF). *The results showed that* the body weight loss of Bali cattle with long-travel stress reached 12.13%. The provision of Indonesian Traditional Medicine Herbal in concentrates up to the level of 200 ml can increase the ratio of dry matter intake (DMI), protein consumption (RPc), average daily gain (ADG), and ratio efficiency (EF). ITMH (Indonesia Traditional Medicine Herbal) is a feed additive that can increase appetite in cattle, resulting in increased ration consumption and weight gain

Keyword: traditional, recovery, transportation, herbs, concentrate, body weight

SCOPE 5
PLANT PROTECTION AND PEST MANAGEMENT

PRT-001

Observation of *Bactrocera dorsalis* (Diptera: *Tephritidae*) Infestation on Large, Cayenne pepper and Curly Chili Plants in Malang

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Abstract

East Java is one of the largest chili production centers in Indonesia, and Malang Regency is the main production center. Chili production is important because it makes a significant economic contribution to the area. However, the attack by the fruit fly pest Bactrocera sp is a serious threat to chili production, causing a decrease in the quantity, quality and continuity of the harvest. The aim of the research was to observe the age at which chili fruit was first infested by the fruit fly Bactrocera sp. The research was conducted on chili farming land in Malang Regency, East Java, from January to June 2024. Sampling was carried out using a survey method and diagonal slices on three types of chilies: Large Chilies, Cayenne Peppers, and Curly Chilies. Observations included fruit phenology, pest infestation, and abiotic factors such as temperature and humidity: The results of the observations showed that Bactrocera sp infestation on chili fruit occurred at a certain age, with the highest infestation occurring on older fruit. The intensity of the attack varies between types of chili, with Large Chili having the highest intensity. Environmental factors such as temperature, relative humidity, and altitude influence Bactrocera sp infestation. Regression analysis shows a relationship between infestation and temperature and altitude. This research provides a new understanding of the infestation pattern of Bactrocera sp on chili plants in Malang Regency. The results can be used to plan more effective and efficient control measures in dealing with pest attacks on chili plants, as well as contributing to increasing production and quality of crops.

Keyword: Chili, Infestation, Fruit flies, production, Fruit age

PRT-002

Mealybugs (Hemiptera: *Pseudococcidae*) Complex of Durian Fruits (*Durio zibethinus* Murr.) in Indonesia

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Abstract

Mealybugs (Hemiptera: Pseudococcidae) commonly attack durian fruits (*Durio zibethinus* Murr.) in Indonesia, but their species are still not clear. This research aims to identify the mealybug species complex of durian fruits based on morphology characters. Samples were taken purposively as many as 74 specimens from 6 site places over the Sunda shelf i.e Bengkulu Province (Seluma, Center Bengkulu, East Bengkulu), Nort Sumatra Province (Toba), West Sumatra Province (Painan), Bali Province (Denpasar). The results were five species of mealybugs belonging to two genera, namely *Dysmicoccus zeynepae* Zarkani & Kaydan*, Dysmicoccus brevipes* (Cockerell), *Planococcus bagmaticus* Williams, *Planococcus dischidiae* (Takahashi) and *Planococcus lilacinus* (Cockerell). The dominant species found was *D.* neobrevipes, whereas the rare species was *P. bagmaticus*. The taxonomic key, microscopic photographs, and taxonomic illustration of all species are updated.

Keyword: Biodiversity, Identification key, Insect pests, Sternorrhyncha, Taxonomy

PRT-003

Exploration of Arbuscular Mycorrhizal Fungi in The Rhizosphere of Shrub *Chromolaena odorata* in Nusa Tenggara Timur, Indonesia

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Abstract

Chromolaena odorata is an invasive shrub species that threaten agriculture and environment worldwide. In Nusa Tenggara Timur (NTT), Indonesia, the weeds is a serious threat to agriculture and savanna areas. Despite its threat to the landscape, *C. odorata* could improve soil fertility. Arbuscular mycorrhizal (AM) fungi (AMF) can form an association with numerous plant species, and possibly with *C. odorata*. This study aimed to evaluate the occurrence and association of AMF with *C. odorata.* The study was conducted at two different ecosystems (agricultural land and savanna) at three different elevation. The first study was undertaken at calcareous soil in Kupang district, while the second was at volcanic soil in Sikka district. At each study site, five soil and root samples were collected from each ecosystems at each elevation. Bulked soil from each study site was analyzed for soil properties. The results of the study showed that in all ecosystems observed, AM spores could be found in the rhizosphere of *C. odorata* and the roots were colonized by AM. The number of AM spores and root colonization were higher in the savanna areas than in the agricultural land, and tended to be lower at higher elevation. The soil analyses showed that the soil cation exchange capacity (CEC) was medium to a high level, total nitrogen was moderate, and available phosphorous (P) was medium to a very high level in the studies areas. This study may provide a new perception of the potential of the weed for improving fallow in the semi-arid land NTT.

Keyword: Arbuscular mycorrhizal fungi, *Cromolaena odorata*, Ecosystems

PRT-004

Effect of Seed Origin and Varieties of *Chrysanthemum multiflorum* on Resistance to Rust Disease

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Abstract

Chrysanthemum is a significant ornamental plant in Indonesia. Rust disease, caused by the fungus *Puccinia horriana*, is a major obstacle to achieving optimal results. The quality of seeds and the resistant varieties are key factors in determining the plant's resistance to biotic stress. This research aims to assess the influence of seed origin and variety on chrysanthemum's resistance to rust. The study was conducted from November 2023 to Februari 2024 in Bandungan, Semarang, Central Java, Indonesia. The study used ten treatments consisting of 5 seed origins and 2 varieties. The seeds originated from conventional propagation (tendrils, and cuttings from farmers) and tissue culture propagation (mixed cuttings of lateral 1 and 2, lateral cuttings 1, and lateral cuttings 2). The two varieties tested were Sena and Gompi. Observations were made in 14, 28, 42, and 56 days after planting (DAP). The research was organized using randomized blocks with 3 replications. The results showed that the origin of the seed and variety influenced the plant's resistance to rust. Plants whose seeds come from conventional propagation of both Sena and Gompi are found to be more resistant. Sena from all seed sources exhibited resistance to rust, whereas in Gompi, only those from conventional propagation. The rust develops most rapidly at the beginning of growth (14-28 DAP)) and decreases in the 28-42 DAP and the 42-56 DAP. The Sena variety is more resistant to rust than the Gompi. The seeds from tissue culture propagation require a strong hardening period during acclimatization.

Keyword: Chrysanthemum, Rust, Seed origin, Variety

PRT-005

Termites (Blattodea: *Termitidae*) in The Sawmill Area in Sukoharjo Regency, Central Java

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Abstract

The habitat of termites is becoming more constrained, which may result in a decrease in the termites' food supply due to the development in urban areas. Termites can harm anything made of cellulose, including sawmills. The purpose of this study was to identify the termite species present in the sawmill region of the Sukoharjo Regency in Central Java. Three sawmill locations were sampled for termites: two in the Polokarto sub-district (Mranggen and Panguripan villages) and one in the Mojolaban sub-district (Dondong village). The sawmill area's soil and vegetation type were recorded. *Nasutitermes havilandi* Desneux (subfamily Nasutitermitinae), *Odontotermes javanicus* Kemner (subfamily Termitinae), and *Macrotermes gilvus* Hagen (subfamily Termitinae) were the three termite species that were found. Compared to other termites, *Nasutitermes haviliandi* had a larger population. Panguripan Village's sawmill was built on alluvial soil, and the plants surrounding it were *Leucaena leucocephala* (Lamtoro) and *Chromolaena odorata* (Kirinyuh). In contrast, the concrete ground of the sawmills in Dondong and Mranggen lacks any soil or plants. The discovered termite species may become a nuisance in the vicinity of the sawmills.

Keyword: Environment, Nasutitermitinae, Termitinae, Urban pest

PRT-006

Types of Cultivated Bananas Infected by BBTV and The Spread of BBTV in Bengkulu

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Abstract

Banana Bunchy Top Virus (BBTV) is one of the limiting factors for cultivated banana production in Indonesia. This virus is transmitted by an insect vector in the form of aphids called *Pentalonia nigronervosa*. BBTV is known to have spread to almost all islands in Indonesia. Losses resulting from damage to banana production in Bengkulu province cannot be separated from the distribution of BBTV in the area. BBTV infections on banana plants were frequently encountered during survey trips in Bengkulu. The survey was carried out starting from the southern coast of Bengkulu, then arriving at the capital Bengkulu, then to the central part and slightly up to the northern part of the province. Most of the plants that are attacked are plants that are neglected and located on the side of the road. The banana cultivars that are often found to be infected with BBTV are Muli, Janten, and Ambon.

Keyword: BBTV, Distribution, Type, Cultivated banana

PRT-007

Potential of Endophytic Bacterial Consortia to Inhibit the Growth of *Helminthosporium oryzae* Breda De Haan Caused Brown Spot Disease in Rice

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Abstract

Helminthosporium oryzae is a pathogen that cause rice damage and losses up to 45% . A consortium of endophytic bacteria as biological agent is one of alternative control and eco-friendly as environmental. Research aim to get endophytic bacteria consortium that can inhibit growth of *H. oryzae in vitro.* This research used a completely randomized design consisting of 7 treatments with 3 replicate. Treatments consisted of A (control), treatment B (*Serratia marcescens* ULG1E4; *Serratia marcescens* JB1E3), treatment C (*Bacillus* sp. HI; *Serratia marcescens* JB1E3), treatment D (*Bacillus* sp. HI; *Bacillus* sp. SJI; *Serratia marcescens* JB1E3), treatment E (*Serratia marcescens* ULG1E4; *Serratia marcescens* JB1E3; *Serratia marcescens* JB1E2), treatment F (*Bacillus* sp. HI; *Bacillus* sp. SJI), and treatment G (*Bacillus* sp. SJI; *Serratia marcescens* ULG1E4). The ability of endophytic bacteria consortia in suppress growth of *H. oryzae* tested using dual culture and poisoning culture method. The parameter observed were inhibiton power of endophytic bacteria consortia, inhibiton power of secondary metabolites of endophytic bacteria consortia, fresh weigth and dry weight of fungi. Treatment G (*Bacillus* sp. SJI; *Serratia marcescens* ULG1E4), B (*S. marcescens* ULG1E4; *Serratia marcescens* JB1E3), and E (*Serratia marcescens* ULG1E4; *Serratia marcescens* JB1E3; *Serratia marcescens* JB1E2), had a high ability to suppress the growth of *H. oryzae* with suspension inhibition 61,28%, 62,93%, 63,55%, and secondary metabolites inhibiton 96,93%, 94,21%, 97,60%.

Keyword: Inhibiton, Antibiotic, Competition

PRT-008

Virulence of the Entomopathogenic Fungus *Metarhizium anisopliae* Against Eggs of *Crocidolomia pavonana* Fabricius (Lepidoptera: *Crambidae*)

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Abstract

Crocidolomia pavonana F. is the main pest on cabbage plants. This pest eats young leaves and causes economic losses. One alternative way to control *C. pavonana* is through the use of the entomopathogenic fungus *Metarhizium anisopliae*. This research aims to obtain virulent isolates of the fungus M. anisopliae to control *C. pavonana* eggs. This study used three isolates of *M. anisopliae* (3B, KRJ, and SRJ) isolated from various plant rhizospheres. The conidia density of the fungus used was 10^8 conidia/ml. Conidia suspension was applied to *C. pavonana* eggs. Observation variables were the mortality of *C. pavonana* eggs, mortality of first-instar larvae, percentage of pupae formed, and percentage of adults formed. The results showed that the entomopathogenic fungus *M. anisopliae* can kill *C. pavonana* eggs. The mortality of a *C. pavonana* egg ranged from 9.06% to 63.66%. Application of *M. anisopliae* to *C. pavonana* eggs can also kill the first instar larvae, with mortality ranging between 77.50 and 80%, and inhibit pupae and adult formation by up to 100%. *M. anisopliae* 3B is an isolate that is more virulent against eggs and larvae of *C. pavonana*.

Keyword: Entomopathogenic Fungi, Cabbage, Larvae, Rhizosphere

PRT-009

Potential of the Biological Agent *Trichoderma koningii* Against *Colletotrichum capsici* Causes Anthracnose Disease in Large Chili Plants (*Capsicum annuum* L.) in Vitro

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Abstract

Anthracnose disease (*Colletotrichum capsici*) can reduce chili production and quality by 45% – 60%. Control of anthracnose disease has been carried out using chemicals. Intensive use of synthetic fungicides has implications for the accumulation of toxic compounds that can harm humans and the environment. One alternative control that is environmentally friendly and produces safe harvests for consumption is to use antagonistic fungi. Trichoderma is an antagonistic fungus which has the ability to secrete antibiotic compounds which function as antifungals in inhibiting growth and even becomes a microparasite of the pathogenic fungus *Colletotrichum capsici*. The research aims to determine the effectiveness of *Trichoderma koningii* against *C. capsici* in vitro. The research was carried out in vitro at the East Java BPTP Pest and Disease Laboratory in March - August 2021. The research results showed that the *T. koningii* fungus was able to inhibit the growth of the pathogenic fungus *C. capsici* by 92.9% on the 12th day after inoculation. Antagonistic fungi *T. koningii* can be used as an environmentally friendly alternative control against *C. capsici*.

Keyword: Antagonistic Fungi, Anthracnose, Biological Agent, Horticulture Plants

PRT-010

Response of Citrus Rootstocks Against Inoculation of Arbuscular Mycorrhizal Fungi (AMF) and *Candidatus* Liberibacter asiaticus

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Abstract

Citrus crops rely heavily on arbuscular mycorrhizal fungi (AMF). The objective of this study was to investigate response of four citrus rootstock species : Japansche Citroen_(J) or *Citrus limonia* Osbeck, Cleopatra mandarin (C) or *Citrus reshni*, Salam_(S) or *Fortunella japonica* cv. "Salam", and Rough Lemon_(R) or *Citrus jambhiri* against the inoculation of AMF and *Candidatus* Liberibacter asiaticus (*C*Las), pathogen of huanglongbing disease. The rootstocks (J, C, S, and R) treated with AMF and *C*las pathogen inoculation with the treatment combination under the annotation of MOCO: no AMF, no *C*Las, MOCI: no AMF,_*C*Las inoculation, MICO : AMF inoculation, no *C*Las, MICI: AMF inoculation, *C*Las inoculation. There were 128 plant samples arranged according to a completely randomized design with four treatments and eight replications. The effectiveness of the AMF treatment recognized by the improvement in the growth of the three variables: plant height, leaf number, and stem diameter. AMF treatment is successful on the rootstock species when the ratio value is greater than one. The effectiveness of AMF treatment to improve plant growth shows that AMF treatment has a positive effect on those of plant growth; plant height, number of leaf and stem diameter. AMF treatment was effective in increasing the growth of citrus plants from all rootstocks and rootstock/scion combination, and effectively reduced disease incidence and severity up to 11 months after AMF inoculation. *C. jambhiri* rootstock was exhibits varying improvements in plant growth and variable levels of HLB disease, and responds well to AMF treatment. Rootstocks treated with AMF but not inoculated with *C*Las performed the best in all variables tested. Plants that were mycorrhizal and inoculated with *C*Las showed better growth and health from control. *C. Jambhiri* had the lowest disease incidence, disease severity and AUDPC than other combination. The AMF symbiotic association is majorly recognized to improve plant growth because AMF can change root system morphology, providing a better absorption area for water and nutrients.

Keyword: AMF, Citrus, Clas, Huanglongbing, Rootstock

PRT-011

Effectiveness the Implementation of Musi Rawas Regency Regional Regulation Number 3 of 2018 concerning Sustainable Food and Agricultural Land Protection

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Abstract

The Musi Rawas Regency Government in preventing the conversion of food agricultural land is by establishing Musi Rawas Regency Regional Regulation Number 3 of 2018 concerning Protection of Sustainable Food Agricultural Land (PLP2B). Data from the Musi Rawas Regency Agriculture and Livestock Service for 2022 shows that from 2018 to 2022 there has been land conversion in Musi Rawas Regency, covering an area of 1,830 Ha to other agricultural businesses and an area of 0.832 Ha. to non-agricultural. This research focuses on examining the problem of agricultural land conversion in Musi Rawas Regency by examining effectiveness of implementation of Musi Rawas Regency Regional Regulation Number 3 of 2018 concerning Protection of Sustainable Food Agricultural Land (LP2B). The type of research carried out is quantitative descriptive research. The subjects of this research were rice center farmers in 6 sub-districts in Musi Rawas Regency. The object of this research is the implementation of Musi Rawas Regency Regional Regulation Number 3 of 2018 concerning Protection of Sustainable Food Agricultural Land. The data used in this research are based on primary and secondary data sources. This research uses quantitative data analysis in the form of figures obtained through a questionnaire on the effectiveness of the implementation of Musi Rawas District Regional Regulation Number 3 of 2018 concerning Sustainable Food Agricultural Land Protection. Effectiveness The implementation of Musi Rawas Regency Regional Regulation Number 3 of 2018 concerning Sustainable Food and Agricultural Land Protection is included in the effective category with an average score of 3.83. This can be seen from the results of each indicator, namely the first input indicator is classified as effective with an average score of 4.04, the second process indicator is classified as effective with an average score of 3.61, and the third is the output indicator classified in the effective category with an average score of 3.54, and the evaluation indicators are classified in the effective category with an average score of 4.11. Obstacles encountered in the implementation of the Regional Regulation of Musi Rawas Regency Number 3 of 2018 concerning Protection of Sustainable Food Agricultural Land, namely obstacles in the cultivation of lowland rice, namely the existence of illegal fast water ponds that use irrigation water, thereby reducing the flow of water to farmers' fields and this causes farmers to water difficulties. The next obstacle is subsidized fertilizer which is still felt to be insufficient

Keyword: Implementation, Effectiveness, Land Conversion

PRT-012

The Effect of Media Composition on The Growth of Entomopathogenic Fungi *Nomuraea rileyi* (Farlow) Samson

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Abstract

The entomopathogenic fungus *Nomuraea rileyi* has the potential as a biological agent to control insect pests, as seen from the discovery of *Spodoptera frugiperda* larvae infected with *N. rileyi* in the field (epizootic). In developing biological agents for application in the field, it is necessary to know the method of propagation on artificial media. This study aims to determine the composition of the appropriate growing media for the propagation of *N. rileyi*. This study was arranged in a completely randomized factorial design with media treatments, namely: (1. Potato Dextrose Agar: pure PDA, PDA + crab shell flour 10 gr, PDA + crab shell flour 20 gr, 2. Sabouraud Dextrose Agar Yeast (SDAY): pure SDAY, SDAY + crab shell flour 10 gr, SDAY + crab shell flour 20 gr, 3. Sabouraud maltose agar yeast (SMAY): pure SMAY, SMAY + crab shell flour 10 gr, SMAY + crab shell flour 20 gr), each treatment was repeated 3 times. The parameters observed were the growth rate of entomopathogenic fungi and conidia production. The results showed that the composition of the media affected the growth rate of *N. rileyi*. In SMAY media + 20 gr crab shell flour, *N. rileyi* grew faster with a colony diameter was 3.14 cm and the production of *N. rileyi* conidia was also greater 2.8 x 10^4 conidia/ml.

Keyword: Epizootic, Media, *Nomuraea rileyi, Spodoptera frugiperda*

PRT-013

Correlation Between Rust Disease Severity Structural and Biochemical Resistance of Five Maize Varieties

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Abstract

Rust disease in corn is a limiting factor in corn cultivation. The severity of this disease can reach 40% with a fairly high yield loss rate. Planting resistant varieties is one of the important ways of management. The purpose of the study was to correlate the severity of rust disease with structural and biochemical resistance in five varieties of maize plants. The research method consists of several stages, namely corn planting, pathogen inoculation, and seeding observation, and maintenance. Observation consists of disease severity at 7 weeks after inoculation, number of stomata, number of trichomes, content of salicylic acid, and content of phenolic compounds. The results showed that the severity in 7 MSI was positively correlated with the number of trichomes, salicylic acid content, and phenolic compound content, but negatively correlated with the number of stomata.

Keyword:

PRT-014

Betasatellites Alter the Begomovirus Infection in Tomato and Oriental Melon

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Abstract

Tomato (*Solanum lycopersicum* L.) is an important vegetable crop in the world recognized by FAO. Tomato is very susceptible to various stresses, both biotic and abiotic stress. Begomovirus infection is reported to be the most common infection in tomatoes in the world. The aim of this study was to determine the impact of the interaction of three betasatellite isolates and four isolates of Tomato leaf curl New Delhi virus (ToLCNDV) on ToLCNDV infection in tomatoes and melons. The betasatellites and begomovirus were cloned into pCAMBIA1308 vector. The constructs were transformed into *Agrobacterium tumefaciens* with some modifications. As a control plant used *Nicotiana benthamiana*. Virus inoculation was conducted by Agro-infiltration which contains cotton leaf curl multan betasatellites (CLCuMuB), malvastrum yellow vein betasatellite (MaYVB), tomato leaf curl betasatellite, DNA-A and DNA-B of ToLCNDV. ToLCNDV isolates are ToLCNDV-TT (Tomato isolate), ToLCNDV-OM (Oriental melon isolate), ToLCNDV-MY (melon isolate) and ToLCNDV-CB (cucumber isolate). The results showed that tomato leaf curl betasatellites increased the severity of four isolates of ToLCNDV, both DNA-A only and DNA-A+DNA-B in *N. benthamiana* and tomato. CLCuMuB and MaYVB couldn't help DNA-A of ToLCNDV to systemic movement but increased the symptom severity of DNA-A and DNA-B of ToLCNDV in *N. benthamiana* and tomato. MaYVB showed unique symptoms with yellow rings on the leaves in *N. benthamiana* and tomato. In oriental melon, three of betasatellites abolished the ToLCNDV infection. The interaction results between betasatellite and begomovirus may help the virus management in the field

Keyword: Begomovirus, Betasatellite, Tomato

PRT-015

Virus Detection on Melon Plants

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Abstract

Melon (*Cucumis melo* L.) is an important horticultural crop with high economic value. However, one of the major constraints in melon cultivation is the prevalence of diseases that cause significant losses. Viral infections are a common cause of these diseases in melon plants. Symptoms such as mosaic, systemic mottling, yellowing, leaf malformation, and stunting have been frequently observed in cultivated melon plants in Bengkulu. This study aimed to detect the viruses causing diseases in melon plants. Virus detection was conducted using serological methods, specifically Dot Immunobinding Assays (DIBA) with antiserum for Cucumber mosaic virus (CMV) and Papaya ringspot virus (PRSV), as well as Polymerase Chain Reaction (PCR) with general primers SPG1/SPG2 for detecting Begomovirus. The results indicated that leaf samples from melon plants showing mosaic, yellow curling, malformation, and stunting symptoms from Kandang Limun (Bengkulu City), Tawang Rejo (Seluma), and Air Sebakul (Central Bengkulu) were positively infected with PRSV, with a 100% disease incidence rate. Infections in Kandang Limun (Bengkulu City) were recorded at 73.3%, Tawang Rejo (Seluma) at 64%, and the lowest in Air Sebakul (Central Bengkulu) at 29%. Detection with SPG1/SPG2 primers identified Begomovirus in Bentiring, Sri Kuncoro, and Pancamukti. BLASTn analysis of the nucleotide sequences revealed that isolates from Bentiring and Sri Kuncoro had 97.28% homology with Tomato leaf curl New Delhi virus (TolCNDV) isolates from Malaysia (MW248665), while the isolate from Pancamukti had 95.22% homology with Squash leaf curl China virus (SLCCV) isolates from Malaysia (EF197940). This study reports the first incidence of TolCNDV infection in melon plants in Indonesia, previously documented in 2019 in Bantul, Yogyakarta, and Purworejo, Central Java. Moreover, this is the first report of SLCCV infecting melon plants in Indonesia, with previous reports of SLCCV infecting cucumber plants in Bali.

Keyword: Leaf Malformation, Mosaic, Yellowing, Stunting, Systemic Mottling

PRT-016

Rhizopogon roseolus Mushroom-Associated Bacteria Enhance Mycorrhizal Symbiosis and *Pinus thunbergii* Plant Health

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Abstract

Rhizopogon roseolus is an ectomycorrhizal mushroom whose main symbiotic partner is *Pinus thunbergii* or black pine, and it is considered a delicacy. Previous reports found Burkholderiales bacteria isolated from *R. roseolus* fruiting bodies stimulated mycelial growth in vitro. In this study, three of these bacteria, *Paraburkholderia fungorum* GIB024, *Caballeronia sordidicola* GIB028, and *Janthinobacterium agaricidamnosum* GIB029, were investigated for their ability to promote mycorrhizal establishment as potential mycorrhizal helper bacteria (MHB). Seedlings of *P. thunbergii* were inoculated with *R. roseolus* and bacteria in a co-culture agar system for 12 weeks. The results indicated that these bacteria enhanced mycorrhizal formation compared to the control without bacterial treatment, with *J. agaricidamnosum* GIB029 forming the greatest number of mycorrhizal units followed by *C. sordidicola* GIB028 and *P. fungorum* GIB024. The bacteria increased total plant dry mass, mainly in the plant root. The addition of bacteria, specifically *J. agaricidamnosum* GIB029 and C. sordidicola GIB028, combined with *R. roseolus* effectively reduced the yellowing rate in *P. thunbergii*. These findings suggest that these bacteria function as MHB by enhancing mycorrhizal formation and promoting plant growth. They may play an additional role in improving plant vigor by reducing the number of yellow leaves. Moreover, the positive role of these bacteria as MHB for *R. roseolus* could greatly assist in increasing mushroom production while simultaneously preserving declining pine vegetation

Keyword:

PRT-017

Diversity and Infestation Patterns of Fruit Flies (Diptera: *Tephritidae*) on Chili Plants (*Capsicum* sp) in East Java Indonesia

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Abstract

Chili plants (*Capsicum* sp) are one of the vegetables that are widely developed in East Java. The chili production that is widely developed is large chilies, curly chilies and cayenne peppers. Fruit flies are an important pest of chili plants which are often found in the East Java area. The research aims to study the diversity and patterns of fruit fly infestation on chili plants. The research used a survey method in six districts in East Java. Sampling was taken using proportional sampling, samples that were indicated to be infested with fruit flies were taken and reared. The research results show that the fruit fly species that infest large, curly and cayenne peppers in East Java are *Bactrocera dorsalis* and *Bactrocera carambolae*. Of the two species, the fruit fly *B. dorsalis* is the most dominant species, with a proportion of 87.4%. Based on the number of fruits in the field, B. dorsalis infested more large chili fruit. Based on fruit phenology, B.dorsalis infestation occurs in 14 day old fruit, and the highest infestation is in 28 day old chili fruit.28 day.

Keyword: B. dorsalis, Chili, East Java, Fruit flies, Indonesia, Infestation

SCOPE 6
LAND RESOURCES MANAGEMENT

LRM-001

Indices and Strategies for Irrigated Paddy Cultivation Sustainability in Selagan Raya Sub-district, Bengkulu

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Abstract

The purpose of the study was to find some strategies based on sustainability indices on irrigated rice fields in Selagan Raya Sub-district, Bengkulu conducted from November 2023 to February 2024. 46 stakeholders having relation with paddy cultivation were as key informants for examining the sustainable paddy cultivation management in this area. The collected data and information tested with rapid appraisal multidimensional scaling (MDS) based on ecological, economical, socio-cultural, technological and institutional dimensions. The MDS accurateness was compared with goodness of fit and Monte Carlo analysis as well as the sensitive attributes was fitted with root mean square (RMS). The rice cultivation in the Selagan Raya in fact fairly sustainable with index of 50.12 however the sustainability status was just close weakly sustainable because the institutional aspect followed its policies suppressed the rice cultivation sustainability with index of 37.84 and the technological dimensions with index of 49.05. To strengthen the sustainability of paddy cultivation on the areas of the irrigated rice fields in the Selagan Raya Sub-district required mechanization systems through more subsidized agricultural machines, improving knowledge through empowerment both farmers group and associations of water using farmers. Also, paddy cultivation should use selected and hybrid rice seed with applied good agricultural practices for increasing the rice productivities. In short, farmer community empowerments through adoptions of new technologies were more attractive and responsive for rice famers through subsidized agricultural appliances to overcome household labor limited.

Keywords: Irrigated paddy fields, Land use change, Rice cultivation sustainability

LRM-002

Strategy of Application Biofertilizer for Navigating Climate Change on Soybean Plant in Coastal Area

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Abstract

Climate change has become a major focus in global agriculture, including in the context of soybean production in coastal regions. This change demands adaptation and innovation in agricultural practices to address challenges such as rising temperatures, changing rainfall patterns, and the risk of extreme weather events that can affect the productivity and sustainability of soybean farming. Research and development of strategies tailored to local conditions are crucial to maintaining food security and environmental sustainability in the future. The research was conducted from March to June 2024 in Beringin Raya Village, Muara Bangkahulu District, Bengkulu City, with coordinates S03°45'23'' E102°15'41''. The production of biofertilizer inoculants was carried out in the Soil Biology Laboratory, Faculty of Agriculture, University of Bengkulu, while soil and plant tissue analysis were conducted in the Soil Science Laboratory, Faculty of Agriculture, University of Bengkulu. The experimental design used was a split plot design with the main plots being two soybean varieties, Anjasmoro and Dering I, and the sub-plots being fertilizer inputs, which included recommended inorganic fertilizers, FMA + Bradyrhizobium + K solubilizer, phosphate solubilizer + Bradyrhizobium + K solubilizer, and bioenzyme. The results showed that the application of phosphate solubilizer biofertilizer + Bradyrhizobium + K solubilizer resulted in the best N uptake, soil pH, and plant growth for the Anjasmoro variety, while the best treatment for the Dering I variety was the application of bioenzyme. Anjasmoro and Dering I varieties exhibited equally good adaptability to coastal land.

Keywords: Biofertilizer, Coastal Land, Soybean

LRM-003

Combination of Type and Dose Level of Organic Fertilizer on Improvement of Soil Health

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Abstract

Nowadays, environmental change has become the main issue for our living sustainable. Soil health evaluation became a critical decision-making process for the development of sustainable agriculture, the sustainability of soil management, and land-use system. Soil health is the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals, and humans, and connects agricultural and soil science to policy, stakeholder needs and sustainable supply-chain management. This research aimed to measure the increasing soil health productivity by organic fertilizers such as vermicompost and compost. This research was conducted by completely randomized block design with 2 factors, vermicompost and compost. All units used 3 replicated with total study units were 30. The result showed that 50- ton Ha^{-1} vermicompost and 20-ton Ha^{-1} have the highest soil health level with category good enough (51,1%). As a beneficial of organic fertilizer, vermicompost and compost can improve the physical, chemical and biological of soils. The increasing of physical properties will enhance soil fertility and crop productivity by increasing the humus content and flourishing of beneficial macro- and microorganisms.

Keyword: Compost, Dose, Organic fertilizer, Soil health, Vermicompost

LRM-004

Dynamic System Application for Solutions to Sustainability Problems Resulting From the Use of Mercury in Small-Scale Gold Processing in Suka Menang Village, Muratara District, South Sumatra Province

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Abstract

The growth of illegal workers in Small-Scale Gold Mining (SSGM) in Suka Menang Village reaches 0.5% per year, due to the shift from the agricultural sector as well as other causes. The use of Hg in the process has impacted humans and the environment, indicated by Hg concentrations in human hair exceeding 1-2 ppm, well water Hg concentrations surpassing 0.001 ppm, the gap between job provision and environmental impact, and the impact on SDG Village 1 (No Poverty Village) indicators related to the village's poverty target of 0%. This is an important factor in this research. This study aims to design a System Dynamics Model to predict various policy options for managing small-scale gold mining (SSGM) concerning current and future community health risks. The research will be conducted from August to December 2023 in Small-Scale Gold Mines in Suka Menang Village, Karang Jaya District, North Musi Rawas Regency, South Sumatra Province. The method used is scenario-based modeling and system dynamics. This method maps the case study based on the quantity of workers in SSGM, Hg concentrations in residential areas, the prevalence of Hg-related diseases among residents and workers, and SDG Village 1 (No Poverty Village). The scenarios implemented include i) job shifting (agreed by 40% of respondents), ii) cooperative membership (agreed by 65% of respondents), and iii) the use of environmentally friendly technology in gold processing. Based on the simulation, it is concluded that the solution scenarios will achieve optimal results if implemented simultaneously.

Keywords: Gold Mining, Mercury, Sustainability, System Dynamics

LRM-005

Analysis of Carbon Stock in Post-Coal Mining Land Reclamation at PT Inti Bara Perdana, Central Bengkulu Regency, Bengkulu Province

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Abstract

Land degradation from coal mining leads to vegetation loss and degraded soil, greatly reducing carbon reserves. This loss inhibits carbon absorption and lowers organic carbon storage, releasing carbon dioxide into the atmosphere, exacerbating greenhouse gas levels and climate change. Rehabilitating mined lands with re-vegetation and soil enhancement is essential to restore carbon reserves and mitigate coal mining's adverse environmental effects. This study aims to analyze the amount of carbon stored in the biomass of reclamation land trees, ground cover plants, necromass, and soil organic matter at various ages after reclamation of coal mining at PT Inti Bara Perdana. The research was conducted in January 2024 on post-mining land of PT Inti Bara Perdana, Central Bengkulu Regency, Bengkulu Province. This study uses direct measurement methods of soil and vegetation carbon at several sampling points on reclaimed post-mining land (ages 4 years, 8 years, and 11 years) and unrehabilitated land, as well as on undisturbed forests. The study method involves creating 20x20 m plots to measure tree biomass, necromass, and wood. Biomass measurements of understory plants and litter necromass use 1x1 m subplots. Soil carbon measurement is conducted by measuring organic carbon at depths of 0-30 cm. The results show that rehabilitated land has higher carbon reserves compared to unrehabilitated land. Carbon reserves tend to increase with the age of reclamation plants, although they are still lower compared to forest land.

Keywords: Carbon Stock, Reclamation Plant, Coal Mining Post

LRM-006

The status of microelements Cu, Pb, Zn, and Cd in the soil with land application of palm oil mill effluents in the District of Tanjung Kemuning, Kaur Regency, Province of Bengkulu

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Abstract

This research was conducted to quantify the level of microelements Cu, Pb, Zn, and Cd in the soil with land application of palm oil mill effluents (POME) in the district of Tanjung Kemuning, Kaur Regency, Province of Bengkulu. Land application of POME refers to the regulation of land application of POME by the Ministry of Environment and Forestry of the Republic of Indonesia (Permen LHK RI No. 5 Tahun 2021). The palm oil mill effluent is applied by flowing it into the ditch (rorak) on the palm oil land. After six months of land application, soil sampling was conducted at 6 classes of soil depth, 0-20 cm, 20-40 cm, 40-60 cm, 60-80 cm, 80-100 cm, and 100-120 cm. The soil sampling location is the soil in the roraks, the soil between the roraks, and the soil without land application. The variables consist of Cu, Pb, Zn, and Cd. The result showed Cu in soil layer depths 40-60 cm, 60-80 cm, and 100-120 cm of rorak higher than in the control and between rorak land. The variable of Zn in the rorak was detected higher than in the other lands at the soil layer depths of 100-120 cm. Meanwhile, the amount of Pb in the rorak was found higher than other soil types in all soil layer depths. The variable of Cd in the rorak was detected at the soil layer depths of 20-40 cm. Although the amount of Cu, Zn, Pb, and Cd in the rorak and land between roraks is still in the tolerable area, the application of POME should be strict to the regulation because of its characteristics that potentially harm the environment.

Keyword: Environment, Palm oil, Toxic elements

LRM-007

Estimation of Sustained Groundwater Resource Potential by Analyzing Aquifer Depth Lithology in Selebar Subdistrict, Bengkulu

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Abstract

Rapid development in one city often ignores the availability of groundwater. This can have negative impacts on the environment and the sustainability of future development. However, information regarding the availability of groundwater reserves is still quite difficult to access and not easy to analyze. Without a good understanding of groundwater reserves, development can risk water supply shortages, environmental damage, and long- term unsustainability. Geoelectric resistivity explains the nature of electrical flow in rocks at a certain depth. This is done through the injection of low-frequency electric current into the earth's surface. The potential electrode records the result as a potential difference. Next, we will obtain a variation of the voltage difference with the same current. With certain calculations, resistance variations will be obtained, which can interpret information about the structure, depth, and type of material through which it passes. This research is aimed at determining the resistivity value of rocks as a reference for groundwater drilling wells. The resistivity geoelectric method was carried out in the research area in Selebar Subdistrict. The results showed that the alleged water-bearing layers were found at varying depths, starting from 60 to 150 meters, and consisted of sandstone, clay, groundwater, and gravel rock lithology.

Keyword: Aquifer, Groundwater, Resistivity, Sustainable, Sandstone

LRM-008

Impact of Land Use and Management on Soil Fertility in Tropical Volcanic Ash Soils of Bengkulu

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Abstract

Volcanic ash soils, renowned for their exceptional fertility, are vital for food production. However, intensive agricultural practices risk compromising their productivity through soil degradation. This study investigated the impact of land use and management on soil fertility within tropical volcanic landscapes. Eight land categories, including coffee agroforestry, vegetable fields, and fallow land, were analyzed. Results indicated that intensive vegetable cultivation significantly increased exchangeable acidity, contributing to a slight reduction in soil pH. Conversely, fallow land exhibited the lowest phosphorus and nitrogen availability, likely due to nutrient depletion from previous cultivation. Coffee agroforestry demonstrated a slightly higher organic carbon content compared to other land uses. These findings highlight the critical role of land management in preserving soil health. Sustainable agricultural practices, such as agroforestry, are essential for maintaining long-term soil fertility and productivity in volcanic ash soil regions. Future research should focus on developing site-specific management strategies to optimize nutrient cycling and mitigate soil degradation.

Keywords: Andosols, Agroforestry, Soil health, Intensive agriculture

LRM-009

The Annual Coastal Flood and Fertility of Coastal Paddy Soil In Bengkulu

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Abstract

The annual occurrence of flooding in Bengkulu City results in widespread damage, affecting various aspects of community life, including social, economic, and agricultural conditions. Furthermore, paddy soil was one type of land that has been significantly impacted on climate change, especially flood occurrence. The research aimed to analyze the fertility status of soil affected by annual flood disasters, evaluating, and mapping the distribution of soil fertility status. The methods used survey, where soil sampling used purposive random sampling. Further evaluation of soil fertility status is in accordance with technical instructions from the Soil Research Center, Bogor (1995). This research was conducted in June – August 2023. The result showed that soil CEC value from each sampling point was classified as high with values ranging from 28.15 me 100 g-1 to 39.83 me 100 g-1. The base saturation value was classified as very low to moderate with values ranging from 11.49% to 40.08%. Soil organic C was classified as moderate to very high with values ranging from 2.42% to 5.97%. The soil phosphorus content was classified as very low to low with values ranging from 2.69 mg 100 g-1 to 12.11 mg 100 g-1. The potassium content was classified as very low with values ranging from 0.14 mg 100 g-1 to 1.43 mg 100 g-1. According to these data, the flood phenomenon has a significant impact on soil fertility. The soil fertility status at the research location is classified as low. Soil fertility parameters which are limiting factors in the status of soil fertility are phosphorus, potassium, and pH. So, it is necessary to add P and K fertilizer to improve the soil fertility status.

Keyword: Coastal, Fertility, Flooding, Paddy soil

LRM-010

Agricultural Land Use Changes Analysis in South Seluma Sub-district Bengkulu using Geo-graphical Information System

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Abstract

Analysis of the agricultural rice cultivation areas has become an urgent issue in the effort to calculate, monitor, manage, and evaluate for sustainable staple food production because land use changes cause uncertain conditions for rice production and food security in Indonesia as well as in Bengkulu. The aim of this study was to show the dynamics of the land uses in South Seluma sub-district Bengkulu conducted from February to May 2024. The existing land use in three periods was analyzed used satellite imagery with appropriate resolutions and multitemporal time taken out 2013, 2018 and 2023 released by United States Geological Survey (USGS). The rice fields in those years were 846.78 ha, 727.95 ha, and 555.42 ha, respectively while the oil palm plantation were 3,879.10 ha, 4,087.97 ha, and 4,045.89 ha, respectively. The rice fields at the South Seluma sub-district within one decade drastically decreased about 34.41% while the oil palm plantation cultivated by the local farmers slightly increased about 4.29%. The huge loss of rice cultivation areas at the South Seluma sub-district could threat rice production in Bengkulu.

Keywords: Land use change analysis, Oil palm plantation, Rice cultivation areas

LRM-011

Exploring the Cellulolytic, Potassium Solubilizing, and Phosphor Solubilizing Potentials of Bacteria and Their Capabilities in Degrading Cellulose, Solubilising Phosphorus, and Potassium

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Abstract

A study using Bali cattle rumen fluid was carried out to explore the bacteria's cellulolytic potential, potassium solubilizing potential, and phosphor solubilizing potential and to test their ability to respectively bacteria in degrading cellulose, breaking down phosphorus and breaking down potassium. Rumen fluid fresh from the slaughterhouse in Bengkulu was collected, filtered, and diluted. The microbial population was calculated using the Total Plate Count method with the *pour plate double layer technique*. Isolation and selection of cellulolytic potential microbes, decomposing P and K, were using specific media CMC, Alexandrov, and Piskovkaya. A clear zone index was used to test the activity of each microbe. The TPC result was 1.5 x10^9. There were three types of potential cellulolytic degrading microbes, the isolation codes were CMC-SP1, CMC-SP2, and CMC-SP3, there wre seven types of K-degrading potential (K-SP1 to K-SP7), and there were ten types of P-degrading potential (P-SP1 to P-SP10). Quantitative test results for clear zone index showed that there was 1 type of potential cellulose-degrading microbe (CMC-SP1), seven types of K-degrading microbes (K-SP1 to K-SP7), and six types of P-degrading microbes were found in isolate codes P-SP1, P- SP2, P-SP-4, P-SP5, P-SP6, and P-SP10. The conclusion from the microbial exploration of Bali cattle rumen fluid is the potential of rumen microbes as cellulose degraders, phosphorus, and potassium decomposers, as evidenced by the synthesis of enzymes by microbes as indicated by the formation of clear zones around the colonies.

Keywords: Bali cattle, Rumen fluid, Cellulolytic bacteria, Potassium decomposing bacteria (K), Phosphate decomposing bacteria (P)

SCOPE 7
COASTAL, FISHERIES, AND MARINE MANAGEMENT

FSM-001

The Impact of Implementing The Blue Economy And Green Economy Concept for Improving The Welfare of Coastal Areas in The Meranti Islands

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Abstract

Indonesia is called a maritime country because it is the largest archipelagic country. This should make Indonesia a developed country with natural resources that have the potential to improve the welfare of its citizens, especially coastal residents. However, in reality, the level of poverty in coastal areas is still very high. The Meranti Islands are the center of attention because they have the potential for rich marine natural resources and coastal ecosystems, but still have many economic problems that need to be addressed to improve community welfare. Some of these problems involve economic, social and environmental aspects. In facing the complexity of this issue, the concepts of blue and green economy have become the focus of attention as sustainable solutions to improve the welfare conditions of society. This study aims to specifically identify the impact of applying the blue and green economy concepts on the welfare of coastal area in the Meranti Islands. This study aims to specifically identify the impact of implementing the blue economy and green economy concepts on improving the welfare of coastal area communities in the Meranti Islands. The method used is Structural Equation Model-Partial Least Square (SEM-PLS) with moderating variables. The research results show that internal and external factors, community empowerment strategies, the concepts of blue and green economy have a direct and significant effect on improving the welfare of coastal area communities. It was also found that the blue economy concept can strengthen the relationship between external factors and increasing community welfare.

Keywords: Blue economy, Green economy, Public welfare, Coastal area, Meranti Islands

FSM-002

Identification of the Level of Social Vulnerability for the Tsunami Disaster in the Coastal Area of Bengkulu City

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Abstract

Bengkulu city is one of the cities that is very vulnerable to earthquakes and tsunamis. This is due to the encounter of two very active world plates, namely the Eurasian continental plate and the Indo-Australian Ocean plate along the West Coast of Sumatra. As an area that is prone to tsunami disasters, efforts need to minimize the impacts that could arise if such a disaster occurs. One of them is by conducting a study of the level of social vulnerability to the tsunami disaster. The aim of this research is to identify the level of social vulnerability to the tsunami disaster in the coastal area of Bengkulu City. This research uses five variables in determining the level of social vulnerability, namely: population density, gender ratio, poor population ratio, disabled population ratio and vulnerable group ratio. The method used to determine the level of social vulnerability is weighting parameters where the level of vulnerability is divided into three levels, namely low, medium and high. The research results show that the Bengkulu City area has a level of vulnerability ranging from low to high.

Keywords: Bengkulu, Social, tsunami, Vulnerability, Weighting parameters

FSM-003

Implementation of Economic Mathematics using Klassen Typology Analysis for Identification of The Development Level of Islands (Case Study: Karimun Regency)

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Abstract

Economic mathematics plays a significant role in analyzing the level of regional development. Klassen typology is a regional analysis technique that uses economic mathematics principally. This study aims to identify the development of the archipelagic region based on regional economic growth and regional per capita income. The data is based on Karimun Regency's gross regional domestic product for 2016-2021. The Klassen typology method is used to classify the typology of regional economic development and regional sectoral development. Regional economic development typology differentiates regions into four quadrants: advanced and rapidly growing regions, potential or still growing regions, depressed growth regions, and relatively underdeveloped regions. The typology of regional sectoral development differentiates the classification of sectors into four quadrants: advanced and rapidly growing sector, potential or still growing sector, depressed growth sector, and relatively underdeveloped sector. The results of the typology analysis of regional economic development showed that Karimun Regency is an advanced and rapidly growing region. The results of the typology analysis of regional sectoral development showed that 9 out of 17 economic sectors have the category of an advanced and rapidly growing sector. Moreover, four sectors are potential or can still grow, two are depressed growth sectors, and one is relatively underdeveloped, namely the manufacturing sector.

Keywords: Economic mathematics, Klassen typology, Regional development

FSM-004

Water Quality and Plankton for Freshwater Eels (*Anguilla bicolor*) in Jenggalu River, Bengkulu Province, Indonesia

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Abstract

Eels are catadromous organism that spend most of their life in fresh water, then migrate to the sea for breeding. The eels stay in the river between 5 and 25 years to become mature eels then go to the sea for spawning and die. The eels have high economic value and Indonesia has the opportunity to develop the potential of tropical eels, which one of the sites is Jenggalu river. Jenggalu river is one of the eels (Anguilla bicolor) habitats in Bengkulu Province. To determine the habitat condition of ells in Jenggalu river, we carried out a study about water quality and plankton diversity for Anguilla bicolor. Water quality observations were carried out during May 2024. pH ranged between 7,11 and 7,20. Dissolved oxygen value from 11-12,2 ppm. Salinity ranged from 3 to 4 ‰. Variations of total dissolved solid content was 155 to 718 ppm. In this research many plankton spesies were found, such as *Achnanthidium*, *Ankyra fott*, *Bacteriasrum* sp., *Brachionus* sp., *Dinophysis*, *Amphiphora* sp., and *Vorticella* sp. which shows high plankton diversity.

Keywords: Water quality, Freshwater eels, Plankton

FSM-005

Length-Weight Relationship of Three Shark Species of Carcharhinidae in the Northern Coast of Jakarta

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Abstract

Length-weight relationship of different three shark species belonging to the family Carcharhinidae, a mil shark (*Rhizoprionodon acutus*), a grey sharpnose shark (*R. oligolinx*), an Australian sharpnose shark (*R. taylori*) were estimated based on 834 samples collected from the gillnet fishery in the northern coast of Jakarta Province from February to December 2023. Two major fishing ports were selected for sampling: Nizam Zachman Oceanic Fishing Port and Muara Angke Nusantara Fishing Port. The estimated allometric coefficient *b* ranged from 2.764 (*R. oligolinx*) to 2.795 (*R. taylori*). The regression parameters were not significantly different between males and females among the shark species which ranged from 0.643 (*R. taylori*) to 0.757 (*R. acutus*). Overall sex ratio favored the females gradually at the rate of 3.3:1. However, sex ratios did differ significantly among the species. This study represents the estimates data of length-weight relationships for the shark landed in the most fishing landing center in the region, and the parameters information will be useful for monitoring shark stocks and sustainable shark fisheries management in the northwestern coast of Java.

Keywords: Carcharhinidae, Length-Weight Relationship, Sex ratio, Shark

FSM-006

Analysis of Growth and Exploitation Yellowfin Tuna in Kaur Regency, Bengkulu Province

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Abstract

Madidihang fish is an economically important type of fish that spreads almost throughout Indonesian waters including Kaur Waters. One of the parameters related to sustainable use efforts is the pattern of growth and exploitation, this factor is one aspect in estimating the condition of madidihang fish populations in a body of water which includes estimates of age, growth, and death. This study aims to identify biological aspects including the size distribution, growth parameters and rate of exploitation of madidihang fish landed in Kaur Regency, Bengkulu Province. The study was conducted from September 2022 to August 2023. Sampling was carried out at the Fish Auction Site (TPI) Linau, Kaur Regency, Bengkulu Province. The data collected in this study are data on the length and weight of madidihang fish caught landed at TPI Linau, Kaur Regency. Based on the analysis of madidihang fish landed at TPI Linau, Kaur Regency, 595 samples of madidihang fish were obtained with a class interval of 85 -184 cmFL. The relationship between length and weight is included in positive allometrics of 3.16 with relative condition factor (Kn) values of 0.98-1.03. The growth parameter shows an asymptotic length value (L∞) of 183.75 cmFL, with a growth coefficient (K) value of 0.59 year-1 and an Lc value of 117 cm. The estimated mortality and exploitation rates are total mortality (Z) 1.14 years^{-1}, natural mortality (M) 0.63 years^{-1}, mortality due to capture (F) 0.51 years^{-1}, exploitation rate (E) 0.45 years^{-1}.

Keyword: Biological aspect, Eksploitation, Mortality, Population, Yellowfin tuna

FSM-007

Microplastic Intensity Profile in Sediment Cores from Two Mangrove Forests in Enggano Island, Northern Bengkulu

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Abstract

Plastic is a crucial and significant substance in contemporary society, serving a vital function in human existence. Nevertheless, the persistence and extended lifespan of plastic have led to a severe ecological crisis in the ocean, known as plastic pollution. This study involved the examination of microplastic pollution in sediment cores collected from mangrove forests located in Kahyapuh and Kaana Village, situated on Enggano Island, North Bengkulu. The results indicated that the concentration of microplastics in sediment cores varied from 0 to 1378 particles/kg, with four classes of microplastics: microfragments, fibers, films, and foams. Microplastics were not present in sediment samples from the mangrove forest areas of Kahyapuh and Kaana Village that were lower than 60 and 65 cm in depth. Kahyapuh Village exhibited a substantially higher concentration of microplastics in sediment cores from the mangrove forest than Kaana Village, which is indicative of the impact of anthropogenic activities on microplastic pollution and the proximity of port activities to the mangrove forest. The findings of the present investigation underscore the possibility that microplastic accumulation has persisted for an extended period and is probably to continue to escalate in the future. Additional research is required to reduce the environmental and aquatic life-threatening effects of microplastic pollution. This includes examining the sources of microplastic, the extent of microplastic accumulation, and the effectiveness of plastic pollution reduction.

Keywords: Enggano island, Microplastic, Mangrove forest, Sediment cores

FSM-008

Alga-Bacterial Synergy: Elucidating the Antibacterial Potential of *Picochlorum sp.* Strain S1b and Its Associated Microbiome

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Abstract

The rise of antibiotic-resistant pathogens necessitates the exploration of alternative antimicrobial strategies derived from natural ecosystems. Algal-bacterial consortia represent a promising avenue, showcasing unique interactions that can lead to the production of bioactive compounds. This study investigates the microalgal strain *Picochlorum sp.* strain S1b, in co-culture with three aerobic bacteria: *Labrenzia sp.* strain #8, *Muricauda sp.* strain #50, and *Arenibacter sp.* strain #61. Collectively referred to as S1b+all, this consortium is noted for its significant anti-Vibrio activity, although the mechanisms behind this effect remain largely unexplored.Our findings indicate that the three bacterial strains rapidly adhere to the surface of S1b, facilitating their proliferation. This interaction likely hinders Vibrio species from accessing vital nutrients produced by S1b, thereby demonstrating a competitive exclusion strategy. Moreover, aqueous extracts from S1b+all cell pellets exhibit pronounced anti-Vibrio activity, suggesting that the antibacterial effect arises not only from nutrient competition but also from the secretion of antimicrobial compounds.This research holds significant promise for developing natural antimicrobial agents, providing a sustainable alternative to traditional antibiotics. Additionally, the insights gained may enhance biotechnological applications in aquaculture, particularly in preventing Vibrio infections and reducing reliance on chemical treatments.

Keywords: Algal-Bacterial Consortium, Antibacterial Activity, Natural Antimicrobials, *Picochlorum sp*., Vibrio Inhibition

SCOPE 7
FORESTRY AND BIODIVERSITY

FST-001

Diversity of Arbuscular Mycorrhizal Fungi in The Rhizosphere of Rubber and Oil Palm in Several Location

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Abstract

Mycorrhizal Arbuscular (AM) Fungi is an association system between plant roots and fungi (*Glomeromycota*) and widespread in various ecosystems. AM Fungi diversity is very high and varies in each ecosystem depending on the type of host plant and climatic conditions and soil properties. In addition, the abundance of spores and colonization patterns of AM Fungi in the roots of host plants is highly dependent on the season (seasonal). This study aimed to determine the diversity of AM fungi in the roots of rubber and oil palm plants on peatlands. For this purpose, soil samples were taken from the rhizosphere of rubber and oil palm in 5 villages in Panai Tengah District, Labuhan Batu Regency. Soil samples and roots of rubber and oil palm plants were analyzed to determine soil chemical properties, spore density, relative abundance and frequency of AM Fungi spores at the genus level and the percentage of AM Fungi colonization of roots. Soil samples from Telaga Suka village had the highest spore density and percentage of root colonization than other villages. AM Fungi of the Glomus genus had the highest frequency in all locations and on both types of plants. The highest AM Fungi genus similarity was found between Telaga Suka Village and Sungai Merdeka Village. Presumably because the soil properties of these two locations are almost the same. The analysis showed that spore density and percentage of root colonization had a close relationship with soil chemical properties, especially the content of P-avl, Cu, Fe and Zn.

Keywords: Arbuscular Mycorrhizal, Oil palm, Rubber, Peatland

FST-002

Morphometry of Tes Lake in Bengkulu, Indonesia

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Abstract

Tes Lake is a natural lake located in Bengkulu, Indonesia. The data on Lake Tes is very limited; therefore, morphometry data of the lake is needed to determine its layers and usage by people. This study aimed to determine the surface and subsurface morphometric dimensions of Lake Tes. Lake mapping used the survey method by creating paths around the edges of water bodies and measuring cross-paths of 3,179 grids of water depth points with a fixed-jumping acoustic technique, which was processed further using ArcGIS software. The results showed that the surface dimension of Lake Tes covered an area of 1,620,800 m^2, with a measured circumference of 11,855.07 m and an SDI value of 5.17. The maximum length was 1,433.01 m, and the maximum width was 962.13 m. The subsurface dimension's maximum depth was 21.90 m, with an average depth of 8.40 m and a relative depth of 0.57 m. The subsurface dimension of Lake Tes had a volume of 14,124,110 m^3 with a VD value of 1.15. The residence time of lake water was approximately 121.20 days, with a water discharge of about 22.01 to 40.84 m^3/sec. The water clarity was around 0.22 to 0.47 m, and the compensation depth was approximately 0.60 to 1.27 m. Lake Tes has low stability and is susceptible to mixing.

Keywords: Morphometry, Surface dimension, Subsurface dimension, Lake Tes

FST-003

Diversity and Distribution of Ectomycorrhizal Fungi in The University of Bengkulu Arboretum

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Abstract

Ectomycorrhizal fungi are only associated with certain types of trees or woody plants. The presence of ectomycorrhiza in forest ecosystems is crucial for the supply of nutrients to plants. The ectomycorrhiza diversity and their interactions with host trees in the University of Bengkulu Arboretum remains uncertain. An inventory must be conducted to determine the arboretum's capacity to support various types of ectomycorrhizal growth. The study employed the exploratory technique, establishing five plots measuring 20cm x 20cm at the location of ectomycorrhizal fruiting bodies. Four plots, each with dimensions of 5 x 10 m, were created within the 20 x 20 m observation plot to assist in assessing fungi. The identified fungi were morphologically compared to those documented in various websites and journals. The total number of trees in all observation plots was 28, with 5 species and 5 families serving as fungi host trees: Senna siamea (Fabaceae), Artocarpus odoratissimus (Moraceae), Alstonia scholaris (Apocynaceae), Swietenia mahagoni (Meliaceae), and Gmelina arborea. We identified 140 ectomycorrhizal fruiting bodies from 9 species and 6 families: Cortinarius sp. (Cortinarius), Hygrophorus sp. (Hygrophoraceae), Amanita sp. (Amanitaceae), Gymnopus sp. (Marasmiaceae), Scleroderma sp 1 (Sclerodermataceae), Porpolomopsis sp. (/ Hygrophoraceae), Scleroderma sp 2 (Sclerodermataceae), Ramaria sp. (Gomhaceae), and Mycena sp, (Mycenaceae). The ectomycorrhizal diversity index is 1.56, placing it in the medium category. However, the relative abundance of ectomycorrhizal fungi is high, with Porpolomopsis sp being the most abundant species and Mycena sp. being the least abundant. The distribution of ectomycorrhizal fungi is 1.37, classified as clustered.

Keywords: Abundance, Arboretum, Distribution, Diversity, Ectomycorrhiza

FST-004

Dynamics of Social Forestry Business Groups and Strategies for Strengthening Forestry Business Assistance

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Abstract

This study analyzes the dynamics of Social Forestry Business Groups (KUPS) and strategies to strengthen forestry business assistance in Rejang Lebong Regency, focusing on KUPS Talang Maju and KUPS Register Lima case studies. The primary objectives are to evaluate the management of forestry businesses within KUPS, identify factors influencing group dynamics, and formulate strategies to enhance business assistance. The research employs a mixed-methods approach, combining qualitative and quantitative methodologies, including case studies, semi-structured interviews, focus group discussions (FGDs), and field observations. The findings reveal significant variations in group dynamics; KUPS Talang Maju exhibited low dynamics, while KUPS Register Lima demonstrated high dynamics. The recommended strategies include fostering a business-oriented mindset, providing intensive counseling, implementing digital business management, clarifying role distribution, improving financial management, increasing production, and standardizing quality. This study aims to enhance the welfare of KUPS members through more effective and sustainable forestry business management.

Keywords: Dynamic of KUPS, Forestry business, KUPS, Social forestry strategy

FST-005

Soil Chemical and Physical Properties of Reforested Mined Land at Different Ages After Reclamation

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Abstract

Fast-growing legume trees are usually used for revegetation of the mined areas because legumes can fix nitrogen due to their symbiosis with rhizobia. The objective of this study was to analyze the changes of soil properties in reclaimed mined soil after 3, 6, and 9 years of revegetation with sengon (Falcataria moluccana) in North Bengkulu, Indonesia. The fieldwork was conducted from August through October 2023. Soil sampling was done in each site at two soil depths, 0-20 cm and 20-40 cm. Biomass of trees, poles, understory, and litter was measured for each vegetation age. Soil chemical and physical properties measured were pH, organic C, P, N, Ca, K, CEC, FC, BD, and texture (percentage of sand, silt, and clay). The statistical analyses conducted were regression, ANOVA, and LSD. Carbon content (C) and Cation Exchange Capacity (CEC) differed significantly among vegetation ages and soil depths. The bulk density of the soil in 3-year-old vegetation was significantly higher than that in other ages, but there was no significant difference between 9 and 6 years old. Total tree, pole, and litter biomass increased with age. Litter biomass was positively correlated with the organic carbon, CEC, and Ca. Soil properties improved over time, indicating the effect of vegetation on soil.

Key words: Falcataria moluccana, mined land, revegetation, soil properties

SCOPE 8
MEDICINAL PLANT AND HERBAL MEDICINE

MPH-001

Isolation and Screening of Inhibitory Power of Mangrove Endophytic Bacteria *Sonneratia alba* from Baai Island, Bengkulu Against *Candida albicans*

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Abstract

Cases of infection in Indonesia caused by Candida albicans, such as candidiasis, represent the highest number of comorbidities in individuals with immune system disorders. In candidiasis patients, the class of antifungal drugs that are often given is the azole group, which has a higher level of resistance. Data shows that 7.69% of candidiasis patients are resistant to ketoconazole. This research explores the potential of the endophytic bacteria Sonneratia alba as an antifungal for C. albicans, whose level of resistance to synthetic antifungals is increasing. This research uses a qualitative data collection method with a type of laboratory experimental research. The first stage was the isolation of endophytic bacteria from the leaves, stems and roots of the S. alba Mangrove using the multilevel dilution method. The next stage was to observe the characteristics of the colony based on shape, edges, elevation, texture and color, as well as Gram staining. The final stage was to test the antagonism of endophytic bacterial isolates against C. albicans. The results of the isolation of the endophytic bacteria S. alba resulted in 83 isolates. Based on the results of morphological observations and characteristics, 83 isolates also had various bacterial forms. The Gram staining test showed that 45 isolates of endophytic bacteria were Gram-positive and 38 isolates were Gram-negative. Antagonist tests showed that 14 isolates of endophytic bacteria were positive for inhibiting the growth of C. albicans. The endophytic bacterial isolate S. alba has the potential to produce bioactive compounds which inhibit the growth of C. albicans.

Keywords: , Antifungal compounds, Candida albicans, Endophytic bacteria, Sonneratia alba

MPH-002

Identification Of Endophytic Bacteria Producing Red Pigment Isolated from The Holoparasitic Plant *Rafflesia arnoldi* R.Br from Bengkulu Province

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Abstract

The holoparasitic plant Rafflesia spp. often found on the island of Sumatra, including Bengkulu Province. This plant has been known for a long time as an ethnomedicinal plant to treat various diseases, including stopping internal bleeding and shrinking the womb after giving birth, and is also used by men as an aphrodisiac. Several studies show that secondary metabolites from the Rafflesia plant have potential as antimicrobial, antioxidant, anticancer and anti-inflammatory. Rafflesia has a distinctive red color which is thought to produce red pigment as a potential secondary metabolite. However, this plant is protected under government regulations and is a rare plant in the critically endangered category according to the IUCN. So this plant cannot be taken freely. Therefore, the alternative is to isolate endophytic bacteria from Rafflesia arnoldi. This endophytic bacteria is thought to be able to produce metabolite compounds in the form of the same red pigment as its host with faster growth. This research aims to isolate and characterize endophytic bacteria from Rafflesia arnoldi which can produce red pigment. Bacterial isolation was carried out using the 10-3 and 10-5 graded dilution methods. The bacterial isolates that grow are then purified and identified based on morphological observations, Gram staining, and biochemical tests (catalase test, carbohydrate fermentation test such as glucose, fructose, sucrose, urea test, citrate test, starch hydrolysis, and motility test). A total of 20 isolates of endophytic bacteria were successfully isolated, 2 isolates of which with the codes ER1 and ER2 had a red morphology and could produce red pigment as indicated by the change in the color of the media to red and included Gram negative bacteria in the form of bacilli. Based on identification referring to the book Bergey's Manual of Determinative Bacteriology, it shows that isolate ER1 is close to the bacterial genus Serratia marcescens and isolate ER2 is close to the genus Serratia nemathodhipila.

Keywords: Biochemistry, Endophytes, Pigments, Secondary metabolites, Rafflesia

MPH-003

Effect of Kebiul Seed Extract (*Caesalpinia bonduc* L.) on the Estrus Cycle of Mice (*Mus musculus* L.)

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Abstract

Background: The reproductive system is an essential system for human survival to obtain offspring, reproductive system disorders in women usually cause menstrual cycle disorders that will affect fertility. Human reproductive physiology has similarities with mice, so mice are often used as experimental animals regarding reproductive disorders, the reproductive cycle in mice is known as the estrus cycle. A typical Bengkulu plant that is believed by the community to be used as a medicine is kebiul, kebiul contains secondary metabolites that have the potential to affect fertility. The purpose of this study was to determine the effect of giving kebiul seed extract on the estrous cycle of mice. Methods: Experimental research with post-test-only control group design. The test animals used were female mice (Mus musculus L.) Swiss Webster strain, aged 6-8 weeks, body weight 20-30gr, as many as 20 mice which were divided into 5 groups, namely the negative control group that was not treated, the positive control group with progynova treatment 0.14 µg / head/day, treatment group P1 280mg / kgBB kebiul extract, P2 420mg / kgBB kebiul extract, P3 560mg / kgBB kebiul extract for 10 days, followed by vaginal kneading for 15 days. The independent variable in this study is kebiul seed extract (Caesalpinia bonduc L.). The dependent variable is the length of the estrus cycle of mice (Mus musculus L.). Data analysis used is the Kruskal-Wallis Test, and Post Hoc Kruskal-Wallis. Results: There was a change in the length of the estrus cycle in treated mice, which became longer than the estrus cycle of untreated mice. The results of the Kruskal-Wallis Test showed a significant effect on the diestrus phase which became longer, with a value of ($P = 0.032$; $P < 0.05$). The results of the Post Hoc Kruskal-Wallis test showed a significant difference in the diestrus phase of P1 ($P = 0.009$), P2 ($P = 0.004$), P3 ($P = 0.026$) compared to the negative control without treatment with a value of $P < 0.05$. Conclusion: All treatment doses with kebiul extract were shown to affect the estrus cycle length.

Keywords: Caesalpinia bonduc, Estrus cycle, Kebiul, Mus musculus