CONFERENCE MANUAL BOOK

The 2nd ICTAFF 2021

INTERNATIONAL CONFERENCE ON TROPICAL AGRIFOOD, FEED, AND FUEL

"The Sustainability of Tropical Agriculture in The Changing World"

SEPTEMBER 7th, 2021

PRESENTED BY:
FACULTY OF AGRICULTURE, MULAWARMAN UNIVERSITY
EAST KALIMANTAN, INDONESIA

TABLE OF CONTENTS

The 2nd International Conference on Tropical Agrifood, Feed and Fuel (ICTAFF) 2021
September 7th 2021
Mulawarman University, Samarinda, Indonesia

Welcome letter

Dear Participants,

Mulawarman University has a pleasure to invite you all to the 2nd International conference on Tropical Agrifood, Feed and Fuel (ICTAFF) 2021 to be held in Mulawarman University, Samarinda East Kalimantan Province-Indonesia, on 7th September 2021. The conference covers the most pertinent scientific topics encompassing Agro-ecotechnology, Agribusiness, Agricultural Product technology (Food sciences and Technology), Animal Sciences and Biosciences. The interconnectivity of science and technology on agricultural research has a vital role for food, feed and fuel sustainability in the changing world, in which the science has obviously contributed on sustainable food security and food safety.

Mulawarman University is located in East Kalimantan province-Indonesia and it is renowned for both beautiful tropical forest and local biodiversity with cultural heritage and background. The 2nd ICTAFF 2021 is one of academic events the university has that will offer opportunities an environment for exploring innovations and extending research networks on tropical studies comprehensively.

On behalf of the organizing committee, we encourage our global partners and colleagues to immerse and join us in this academic event and enhance our knowledge and experience of the sustainability agriculture in tropical milieu.

Prof. Dr. Masjaya

Rector of Mulawarman University

Opening Remarks
By Dean Faculty of Agriculture, Mulawarman University of 2nd ICTAFF International Conference
"The Sustainability Of Tropical Agriculture in The Changing World"
Samarinda 7th 2021

Prof. Manat Chaijan, Ph.D
(Walailak University, Thailand)
Prof. Dr. H. Masjaya, M.Si.
(Rector of Mulawarman University)
Prof Monchai Duangjinda
(Khon Kaen University-Thailand)
Prof. Dr. Sc. Agr. Ir. Suyadi, MS., IPU., ASEAN Eng.
(Brawijaya University, Indonesia)
Prof. Temple Grandin
(Colorado State University- USA)
Sugiharto, S.Pt, M.Sc., Ph.D.
(Diponegoro University, Indonesia)
Shamala Marimuthu, M.Sc
(Manipal International University, Malaysia)
Dr. Ir. Ndan Imang, M.P
(Mulawarman University, Indonesia)
Prof. Frederick Masangkay, Ph.D.
(Far Eastern University, Philippines)
Asst. Prof. Giovanni De Jesus Milanez, Ph.D.
(Royal and Pontifical University of Santo Tomas, Philipinnes)

Honorable speakers, Distinguished Guests, Ladies and Gentlemen

On behalf of the 2nd ICTAFF international conference 2021, I am very pleased to be here participating as a Steering committee.

As we know, agricultural science and technology has a profound effect on Food, Feed and Fuel security, humanity and economic growth of the world. We must have pledge that there is sufficiency Food, Feed and Fuel to the world population which will be grown nearly 9 billion by year 2050. The agricultural science and technology has evolved and proven with several innovation fronts since ancient time to millennium era where Food, Feed and Fuel are available widely to serve a variety of purposes and needs; from farm to fork, people grow crops, make food products and serve foods at home, in restaurants, cafés and catered to various parties. Furthermore, feed also has a vital role to support sustainable animal production for producing protein source from red and white meat. The Food, Feed and Fuel industries are based on human tradition, culture and customary practices of the communities. Nowadays, more sophisticated research and development require aggressive strategies in order to improve business and product position for delivering values to the consumers such as better nutrition, high quality products with green technology for convenience and for other consumer preferences.

The newfangled agriculture innovative ideas and smart utilization of natural and energy resources drives fierce competition in the changing world. The food, feed and fuel businesses competition rest on 3-4 basic approaches including effective and efficiency in the plants, traceable and transparent ingredients supply chains, consumer driven market strategy

and innovative technology, and environmental sustainability. In recent years, the consumer main concern on Food is heightened on health, unique (higher-valued) ingredient and conversion of existing biological materials from tropical areas to new functional ingredients are constantly explored. Nevertheless, as today's consumers are more educated about food and health including environmental health , further development in more sophisticated raw materials for feed and fuel or ingredient supply chains are becoming in order to enhance the industry competitiveness in agriculture sector both in efficient use of natural resources and raw materials and in the same time bringing more high values to the consumers with new and innovative products.

Finally, I would like to acknowledge the strong support received from the sponsors and institutions where without their support the international conference would not have been possible.

Thank you.

Prof. Dr. Ir. H. Rusdiansyah
Dean Faculty of Agriculture Mulawarman University

Opening Remarks
By Chairman, Mulawarman University of 2nd ICTAFF International Conference
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Honorable speakers, Distinguished Guests, Ladies and Gentlemen

On behalf of the 2nd ICTAFF international conference 2021, I am very pleased to be here participating as an Organizing committee.

I am delighted to be here for the ICTAFF international conference 2021. First of all, I would like to welcome everyone and thank you all for being here today. The development of every nation in this world is underpinned by sophisticate and outstanding research and development in science and technology. Therefore, the main goal our gathering through scientific event is how we shared and linked together by ideas, knowledge, and collaborative work in Food, Feed and Fuel science and technology to give an added value of World's food, feed, and fuel for fulfilling the needs of aging community and society soon.

The population growth is aging rapidly within two decades and the changing world due to the declining share of working age population, climate change and pandemic Covid19 have affected and impacted economic growth in all around the globe especially in agriculture sector. While research and development are the key success and has an important role for food feed and fuel innovation and sustainability in the changing world. 2nd ICTAFF conference has become a leading event in bringing together academic and industry professionals from all sectors related to Food, Feed and Fuel. This event is in turn an effective learning environment for all, learners, researchers including young scientists participating in this conference. In the current situation and coming decades, building partnerships between

academia and industry bridges the gap of the innovations, opportunities and challenges. Science and technology will position our country as a provider of Food, Feed, and Fuel services to the growing population across the world.

With the continual efforts of the Faculty of Agriculture Mulawarman University-Indonesia in collaboration with Ministry of education (Higher degree research and technology) including all stakeholders who are concerning on Food, Feed and Fuel in Tropical areas for contributing to the success of this conference. Special thanks and gratitude's to all distinguished guests and speakers, who will share their knowledge and perspectives.

I hope you enjoy the various sessions and networking at the conference. May I officially declare the 2nd ICTAFF International Conference 2021 open and wish this conference a great success.

Thank you.

Ari Wibowo, Ph.D.
Chairman of 2nd ICTAFF 2021

CURICULUM VITAE OF KEYNOTE AND INVITED SPEAKER

Name : Prof. Manat Chaijan, Ph.D
Institution : Agricultural Technology, Walailak University, Thailand
Research Interest : Meat Science Technology, Healthy Meat Products

Prof. Manat Chaijan, Ph.D is a Lecturer remain in the Meat Science Technology, Healthy Meat Products at Department Agricultural Technology, Walailak University, Thailand. He has many publications in international journals related to food technology

Name : Prof. Monchai Duangjinda
Institution : Animal Science Department, Faculty of Agricultural, Khon Kaen University, Thailand
Research Interest : Molecular Biology, Evolutionary Biology, Genetics
Education : Bachelor in Kasetsart University, Thailand
M.Sc. in Kasetsart University, Thailand
Ph.D. in University of Georgia, in the United States

Prof. Monchai Duangjinda is a Lecturer remain in the Animal Science at Faculty of Agriculture, Khon Kaen University, Thailand. He has many publications in international journals related to animal genetics.

Name : Prof.Dr.Sc.Agr.Ir. Suyadi, MS, IPU., ASEAN Eng.
Institution : Faculty of Animal Science, Brawijaya University
Research Interest : Breeding and Reproduction of Livestocks
Education : Bachelor-1986, Brawijaya University.
Master- 1996 , University of Goettingen.
Doctor- 1999, University of Goettingen.

Prof Suyadi is Lecturers and professors remain in the field of Reproductive Biotechnology at the Faculty of Animal Science, Brawijaya University. Prof. Suyadi has a scientific background in research related to handling and freezing semen of chickens, goats and cows, Test of genetic diversity using genetic molecular markers in goats and beef cattle, Genetic analysis for candidate genes for production and reproduction traits in goats and cattle, and Selection technique for superior bull cattle based on candidate gene markers. He also has dozens of publications and Intellectual Property Rights in accordance with his sciences.

Name : Prof. Mary Temple Grandin
Institution : Colorado State University, USA
Research Interest : Livestock Behaviour, Design of Facilities and Humane Slaughter
Education : Grandin went on to earn her bachelor's degree in human psychology from Franklin Pierce College in 1970, a master's degree in animal science from Arizona State University in 1975, and a doctoral degree in animal science from the University of Illinois at Urbana–Champaign in 1989.

Mary Temple Grandin is an American scientist and animal behaviourist. She is a prominent proponent for the humane treatment of livestock for slaughter and author of more than 60 scientific papers on animal behavior.

Name : Sugiharto, S.Pt., M.Sc., Ph.D.
Institution : Faculty of Animal and Agricultural Sciences, Diponegoro University
Research Interest : Poultry nutrition and health
Education : Bachelor-2002, Diponegoro University
Master- 2010 , University of Aarhus, Denmark
Doctor- 2014, University of Aarhus, Denmark

Sugiharto is a Lecturer remain in the poultry and health at Faculty of Animal and Agricultural Sciences, Department of Animal Science in Diponegoro University. He has many publications in international journals related to poultry nutrition.

Name : Shamala Marimuthu, M.Sc
Institution : Manipal International University, Malaysia
Subject Matter Expert : Cell and Developmental Biology, Animal Biotechnology, Medical Biotechnology and Molecular Biotechnology.
Research Interest : Mesenchymal stem cell (cell culture), natural plants (Biochemical, characterization, antioxidant and antimicrobial properties), genomics, and algal biotechnology.

Shamala Marimuthu is a Malaysian scientist, She has 5 years of corporate experience, in the realm of stem cell industry as assistant production manager. (Qualified internal trainer for quality management system and cGMP facility).

Name : Dr. Ir. Ndan Imang, MP
Institution : Faculty of Agriculture, Mulawarman University
Research Interest : Agricultural Development Science
Education : Bachelor-1989, Mulawarman University
Master- 2003 , Mulawarman University
Doctor- 2010, University of Tokyo, Japan

Ndan Imang is Lecturers remain in the Agricultural Socio-Economics in Mulawarman University. He has many publications in national and international journals. in addition, He also has Professional Experience and International Seminars, as well as a consultant on the environment in several different places.

GENERAL INFORMATION

Conference Theme:
The international event is called The 2nd International Conference on Tropical Agrifood, Feed and Fuel with the theme "The Sustainability of Tropical Agriculture in The Changing World"

Period and Venue:
The 2nd ICTAFF will be held on September 07, 2021 . The main venue of the Conference is Meeting Hall Mulawarman University (Offline), and Room Zoom Meeting (Online).

Official Language:
English is the official language in conference. Translation facility is not provided.

Secretariat Office:
The 2nd ICTAFF Secretariat Room will be operated in Department of Animal Science, Faculty of Agriculture, Mulawarman University, Jl. Paser Belengkong, Kampus Gunung Kelua, Samarinda, East Kalimantan, Indonesia.

Registration:
Participant can register before conference will conduct at website www.ictaff.unmul.ac.id and follow the directions sent on the registered email.

Oral Presentation:
Oral presentation for keynote and invited speaker and short presentation are located in room zoom meeting, Meeting ID: 835 4661 5662; Passcode: ICTAFF2021. Specifically for short seminars, a breakout room will be provided according to the grouping of research topics.

Internet:
All regirested participants are eligible to use internet for free.

Time Zone:
Samarinda standard local time is included in Central Indonesia Time Zone

Seminar Venue:
The main venue of the Conference is Meeting Hall Mulawarman University (Offline), and Room Zoom Meeting (Online).
Time of Opening Ceremony: 08.00 - 09.30 a.m.GMT, Tuesday, September 7, 2021
Time of Closing Ceremony: 05.00 - 06.00 p.m.GMT, Tuesday, September 7, 2021

CONFERENCE COMMITTEE

Advisory Committee : Prof. Dr. Ir. H. Rusdiansyah, MSi
Prof. Dr. Bernatal Saragih, SP., M.Si
Nurul Puspita Palupi, SP, M.Si.
Dr. Achmad Zaini, SP, MSi

Steering Committee (SC) : Dr. Ir. Taufan Purwokusumaning Daru, MP
Dr. Ir. Syamad Ramayana, MP
Ir. Midiansyah E., MSi
Sulistyo Prabowo, STP, MP, MPH, PhD

Team Reviewer : Prof. Temple Grandin (Colorado State University, United States of America)
Prof. Manat Chaijan (Walailak University, Thailand)
Dr. Fahrunsyah (Mulawarman University, Indonesia)
Dr. Maria Ulfa (IPB University, Indonesia)
Prof. Yuny Erwanto, Ir., S.Pt., MP., Ph.D., IPM (Gadjah Mada University, Indonesia)
Mohammad Zainal Abidin, S.Pt., M.Biotech (Gadjah Mada University, Indonesia)
Prof. Dr. Pijug Summpunn (Walailak University, Thailand)
Prof. Skorn Koonawootrittriron (Kasetsart University, Thailand)
Prof. Dr. Worawan Panpipat (Walailak University,Thailand)
Dr. Nguyễn Hữu Hiền Nguyễn (Vinh University, Vietnam)
Dr. Jonathan V. Lazaro (Central Luzon State University, Philippines)
Prof. Dr. Giovanni De Jesus Milanez (Far Eastern University, Philippines)
Prof. Dr.Sc. Agr. Ir. Suyadi, MS,IPU,ASEANEng. (Brawijaya University, Indonesia)
Sugiharto, S.Pt., M.Sc., Ph.D (Diponegoro University, Indonesia)
Shamala Marimutu (University Malaysia, Malaysia)
Dr. Ir. Ndan Imang, MP (Mulawarman University, Indonesia)
Anton Rahmadi, S.TP., M.Sc., Ph.D (Mulawarman University, Indonesia)
Dr. Ir. Hj. Sopialena, MP (Mulawarman University, Indonesia)
Widi Sunaryo, SP, MSi, Ph.D (Mulawarman University, Indonesia)

Organizing Committee (OC)

Chairperson : Ari Wibowo, SPt, MSi, PhD

Secretary : drh. Fikri Ardhani, SKH, MSc

Treasurer and Fund Rising : Dinar Anindyasari, SPt, Msi
drh. Khoiru Indana, MSi
Dr. Ir. H. Ibrahim, MP

Event

Coordinator : Dr. Hamdi Mayulu, S.Pt., M.Si
Members : Surya Nur Rahmatullah, S.Pt., M.Si
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Dr. Odit Ferry Kurniawan, SP., MP.
Erwan Suryaatmaja, SP., MP.
Hj. Maulida Rachmawati, SP., MP.
Haviluddin, S.Kom., M.Kom., Ph.D

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	Sumiasih	Jumadi, S.Kom
	Nur Hidayah, S.E.	Hernadi Sudirman, S.P.
	Rizali Hadi, S.Pt.	Tatik Aniah, SKM
	Lisdiana	

Publishing

Coordinator	: Arif Ismanto, SPt, MSc	
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	Widi Sunaryo, S.P., M.Si., Ph.D	
	Prof. Dr. Karmini, SP., MP.	
	Dr. Ir. H. Fahrunsyah, M.P	
	Prof. Dr.oec.troph. Ir. Krishna Purnawan Candra, M.S	

CONFERENCE MEETING ROOM CODE

Tuesday, September 07, 2021

Center Room for Plenary Session & Parallel Session

Link: https://s.id/ICTAFF2021

Meeting ID: 835 4661 5662
Passcode: ICTAFF2021

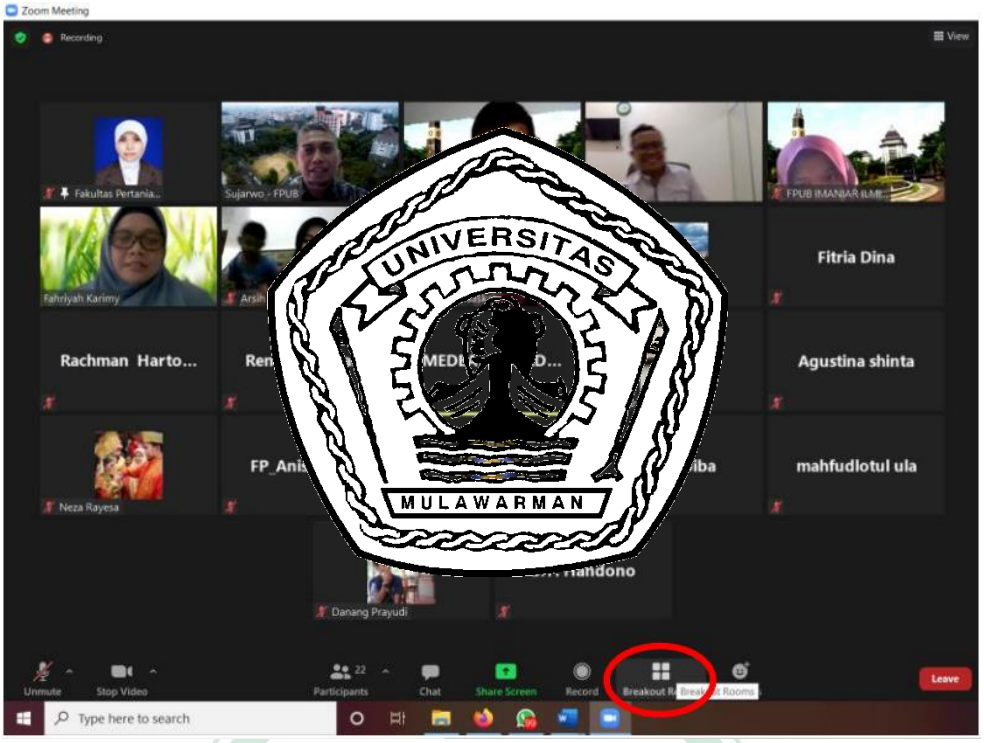
CONFERENCE GUIDANCE

PLENARY SESSIONS GUIDELINE:

1. Participants join the plenary session (link: via given link) 30 minutes before the session starts.
2. Login with the following username format:
   - Moderator/Participant_First and Last Name. (Eg: Moderator_Mahadewa)
   - Presenter : code and registered name. (Ex: A1-AGR_Mahadewi)
3. Turn on camera and mute the microphone throughout the plenary sessions.
4. Participants are expected to be able to use the virtual background that has been provided
5. Participants can give questions through “raise hand” or “chat zoom” feature.
6. After plenary sessions, join the parallel sessions as scheduled.

PARALLEL SESSIONS/ SHORT ORAL GUIDELINES :

1. Oral presenting will be conducted at virtual zoom meeting (Meeting ID: 835 4661 5662, Passcode: ICTAFF2021)
2. Please rename your Zoom Id with the conference program code and registered name, for example, A1-AGR_Mahadewi (A1-AGR describes room A sequence 1, Agronomy science). Do not forget to updateyour zoom application to joint with breaking room easier. The committee will try to group thepresenter to avoid confusion, so the presenter pushes the “join” button on the screen or you can enter manually the breakout room according to the specified room.
   How to enter a breakout:
   Click “breakout rooms” (right side of the record) then select the specified breakout room, for example: “Room1, Room2, and etc”.



Picture Position Option "**Breakout Rooms**"

3. Five presenters would be speaking in series, followed by a Q&A session for all speakers for 7 minutes, where each presentation has been allocated for 3 minutes maximum.
4. During speech and discussion, any particular point will be raised by juries to decides the best presenter in the parallel room.
5. Non Presenter participants are allowed to participate in parallel sessions according to the desired topic by entering the available breakout room
6. For further information, ask your moderator that will make WAG for making transport the information line easier.

E-Certificate:

Participants:

- Fill the form that we share during the conference (panel section). Only participants who register and fill in the attendance form are given a certificate

Presenters:

- Fill the form that we share during the parallel section. Only presenter who register and fill in the attendance form are given a certificate.

RUNDOWN MEETING 2ND INTERNATIONAL CONFERENCE ON TROPICAL AGRIFOOD, FEED, & FUEL (ICTAFF) 2021
"The Sustainability of Tropical Agriculture in the Changing World"
Faculty of Agriculture, Mulawarman University

September, 7th, 2021
Online Conference

No	Time	Event	Held (Person)
1	08.00-08.15	Registration	Organizing Committe
2	08.15-08.20	Opening Ceremony	MC : Qonitha Aqila Shofi (PTK 2019)
3	08.20-08.25	National Anthem of Indonesia "Indonesia Raya"	All Participants
4	08.25-08.30	Pray	Blego Sedionoto, SKM, M.Kes., Ph.D
	08.30 – 08.40	Welcome Speech From Chairman of Committee ICTAFF 2021	Ari Wibowo, S.Pt, M.Si, Ph.D
5	08.40 – 08.50	Welcome Speech From Dean Faculty of Agriculture, University of Mulawarman	Prof. Dr. Ir. H. Rusdiansyah, M.Si
6	08.50 – 09.00	Welcome and Opening Speech From Rector University of Mulawarman	Prof. Dr. Masjaya, M.S
7	09.00 – 09.05	Take a picture in virtual	All Participants
8	09.05-11.25	Plenary Session I	Moderator : Prof. Frederick Masangkay, Ph.D. (Far Eastern University, Philippines) and Prof. Dr. oec.Troph. Ir. Krishna Purnawan Candra,MS. (Mulawarman University, Indonesia)
A	09.05-09.25	Keynote Speaker III :*"pH-shift Processing as a Cold Biorefinery Approach for Recovering Protein From Animal-derived Raw Materials*"	Prof. Manat Chaijan, Ph.D (Walailak University, Thailand)
B	09.25-09.45	Keynote Speaker II: *"Tropical Animal Genetic Resource Utilization as Functional Food For the World"*	Prof. Monchai Duangjinda (Khon Kaen University, Thailand)
C	09.45-10.05	Keynote Speaker IV: "Strategy in Livestock Breeding and Reproduction technologies toward challenges in the changing world"	Prof. Dr. Sc. Agr. Ir. Suyadi, MS., IPU., ASEAN Eng. (Brawijaya University, Indonesia)
D	10.05-10.25	Keynote Speaker I "Cattle Behavior and Animal Welfare"	Prof. Temple Grandin (Colorado State University, USA)

E	10.25 -11.25	Discussion	All Participants
9	11.25 – 11.30	Award Certificates for Keynote Speaker	MC
10	11.30 – 13.00	Plenary Session II	Moderator: Asst. Prof. Giovanni De Jesus Milanez, Ph.D. (Royal and Pontifical University of Santo Tomas, Philipinnes) and drh. Fikri Ardhani, M.Sc (Mulawarman University, Indonesia)
A	11.30 – 11.45	Invited Speaker I : *"Herbal Supplements for Sustainable Broiler Production During Post-Antibiotic Era in Indonesia"*	Sugiharto, S.Pt, M.Sc., Ph.D. (Diponegoro University, Indonesia)
B	11.45 – 12.00	Invited Speaker II : "*Importance of Biosafety for Sustainable Agriculture*"	Shamala Marimuthu, M.Sc (Manipal International University, Malaysia)
C	12.00 – 12.15	Invited Speaker III: "*To Change the Paradigma of Traditional Swidden Agriculture to Improve Productivity: Case Study in Mahakam Ulu Regency, East Kalimantan, Indonesia*"	Dr. Ir. Ndan Imang, M.P (Mulawarman University, Indonesia)
D	12.15 – 13.00	Discussion	All Participants
11	13.00 – 13.05	Award Certificates for Invited Speaker	MC
12	13.05-14.00	Break	Organizing Committe
13	14.00-16.00	Parallel Session	Organizing Committe
14	16.00-16.10	Announcement Best Presenter	MC
15	16.10-16.15	Award Presentation	MC
16	16.15- 16.30	Closing Remark	Organizing Committe

*Central Indonesia Time

Breakoutroom 1 : **Agroecotechnology**
Moderator : **Prof. Dr.sc.Agr. Nurhasanah, SP., M.Si & Widi Sunaryo, Ph.D**
IT Support Room 1 : **Dian Noor Arthady Wijaya, SP, M.P**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	14.00-14.07	A1-AGR	First Report of an Ice Cream Cone Bagworm Manatha conglacia Haettenschwiler (Lepidoptera: Psychidae) in Oil Palm Plantation of Central Kalimantan, Indonesiaort of an Ice Cream Cone Bagworm Manatha conglacia Haettenschwiler (Lepidoptera: Psychidae) in Oil Palm Plantation of Central Kalimantan, Indonesia	**Fitrah Murgianto**
2	14.07-14-14	A2-AGR	Characteristics of Fish Waste-Based Fertilizer and Its Application in Organic Sweet Corn	**Ikhsan Hasibuan** and Sarina
3	14.14-14.21	A3-AGR	Effectiveness of dolomite on growth and yield of maize (Zea mays l.) in dry land	**Amik Krismawati**, Evy Latifah and Sugiono
4	14.21-14.28	A4-AGR	Evaluation of Soil Characteristics on Coffee Land in Sinjai Regency, South Sulawesi	**Asma Assa**, Jamilah, Arni Pratama, Rahmad Wahyudi, Mamang, Andi Nur Amaliah, and Dwi Indriana
5	14.28-14.35	A5-AGR	Benzyl Amino Purine (BAP) Growth Regulator Application and Shoot Origin Benzyl Amino Purine (BAP) Growth Regulator Application and Shoot Origin Stem Lai (Durio kutejensis) Against Growth Durian Grafting Seeds (Durio zibethinus)	**Syamad Ramayana**, Bambang Supriyanto, Widi Sunaryo, Susilowaty, and Sabeth Adiastie
	14.35-14.55		Discussion	Moderator
6	14.55-15.02	A6-AGR	Investigation of C-Organic Content, N, P and K, pH and C/N Ratio of Tidal Rice Fields in Sidomulyo Village, Anggana District, Kutai Kertanegara Regency, East Kalimantan (Series 1)	**Suria Darma**, Syamad Ramayana, Sadaruddin, And Bambang Suprianto
7	15.02-15.09	A7-AGR	Nutritive Value of Botanical Fraction in Maize by-Products from Various Varieties	**Endang Sutedi**, Budi Utomo and Heri Kurnianto
8	15.09-15.16	A8-AGR	Harvest Time and Secondary Processing on the Quality of Moringa Leaves (Moringa oleifera)	**Rahmi Dianita**, Ubaidillah, A. Rahman Sy. Ahmad Yani
9	15.16-15.23	A9-AGR	Study on Genetic Variability and Heritability in F5 Segregating Generation for Yield and Its Compenents in Yardlong Bean	**Florentina Kusmiyati**, Syaiful Anwar and Bagus Herwibawa
10	15.23-15.30	A10-AGR	Concentration of N, P and K Nutrients in The Eucalyptus pellita F.Muell Tree Components in East Kalimantan, Indonesia	**Ria Paranoan**, Wawan Kustiawan, Marjenah, Wahjuni Hartati, Syahrinudin, Triyono Sudarmadji, Sukartiningsih
11	**15.30 – 15.37**	A11-AGR	Fruit performance and edible part nutritional value analysis of three Lai-Durian (D.zibethinus x D. Kutejensis) plant From East Kalimantan, Indonesia	**Odit Ferry Kurniadinata**, Bernatal Saragih, Rusdiansyah
	15.37-15.57		Discussion	Moderator

Breakoutroom 2 : **Agribusiness Agriculture**
Moderator : **Qurratu Aini, S.Gz., M.Si**
IT Support Room 2 : **Aditia Nugraha, S.P**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	14.00-14.07	B1-AGB	Paddy Farm Income in Relation to Experience by Geographical Regions in East Kalimantan	**Karmini** and Karyati
2	14.07-14-14	B2-AGB	Sensitivity Analysis of Swiftlet Farming in Kota Bangun, Kutai Kartanegara	**Mursidah**, Abubakar M. Lahjie , Masjaya, and Yaya Rayadin
3	14.14-14.21	B3-AGB	Performance of Nutmeg (Myristica fragrans) Post Harvest and Marketing in East Halmahera Regency	**Asmanur Jannah**, Sari Anggarawati, Sunardi and Isnain Turuy
	14.21 – 14.41		Discussion	Moderator
4	14.41-14.48	B4-AGB	Analysis of Added Value in the Processing Business of Palm Plant Products (Arenga pinnata Merr) in Minta Village, Penyinggahan District, West Kutai Regency	**Tetty Wijayanti**, M. Erwan Suriatmaja, and Hepi
5	14.48-14.55	B5-AGB	Role of The Agriculture Sector in Poverty Reduction in East Kalimantan	**Mariyah** and Agung Enggal Nugroho
6	14.55-15.02	B6-AGB	Farmer Group Conformity in Banyumas Regency: A Comparative Study based on the Number of Members and the Long Establishment of the Beef Farmer Groups	**Krismiwati Muatip**, Lis Safitri, Hermin Purwaningsih, and Eky Widi Prasetya
	15.02-15.30		Discussion	Moderator

Breakoutroom 3 : **Agricultural Product Technology (Food Science Technology) - A**
Moderator : **Prof. Bernatal Saragih & Agustu Sholeh P., Ph.D.**
IT Support Room 3 : **Hernadi Sudirman, S.E**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	14.00-14.07	C1-APT	Analysis of The Chemical Properties of Bread from Grain Germination Rice Flour and Parboiled Rice Flour	**Nur Afni Azis,** Andi Nur Faidah Rahman, Muhammad Asfar
2	14.07-14-14	C2-APT	Product Development Based on Rice Flour Germinated to The Manufacture of Vermicelli	**Kurniati Tajuddin**, Andi Nur Faidah Rahman, Meta Mahendradatta
3	14.14-14.21	C3-APT	Effect of Decaffeination and Re-frementation on Level of Caffeine, Clorogenic Acid and Total Acid In Green Bean Robusta Coffee	**Heppy Love Rida Sinaga**, Februadi Bastian and Adiansyah Syarifuddin
4	14.21-14.28	C4-APT	Preparation of Sea Cucumber (Holothuria scabra) Powder: Effect of Pre- treatment on Its Nutritional Characteristics	**Ansharullah**, Andi Besse Patadjai, Asranudin, and Tamrin
5	14.28-14.35	C5-APT	Nitrogen Use Efficiency of Irradiated Mutant Rice	**Ania Citraresmini,** Taufiq Bachtiar, Nico Anggi Flatian, Nur Robifahmi, Muftia Hanani, and Indra Milyardi
	14.35-14.55		Discussion	Moderator
6	14.55-15.02	C6-APT	Chemical Analysis And Microbial Population Of Belacan Depik, Fermented Fish Product Of Rasbora Tawarensis	**Eva Murlida,** C. Nilda and M. Muzaifa
7	15.02-15.09	C7-APT	Addressing The Sustainable Agricultural Agenda: Gac Fruit Benefit in Qur'an and Value Chain Perspective	**Ahmad Shabudin Ariffin**, Ramisah Mohd. Shah, Khalilullah Amin Ahmad and Hasrul Bin Hashom
8	15.09-15.16	C8-APT	Sensory and Chemical Properties Characteristics of Cookies Products from The Formulation of Brown Rice Flour (Oryza Nivara L.) and Mocaf Flour (Modified Cassava Flour)	**Maulida Rachmawati**, Hudaida Syahrumsyah, Yulian Andriyani, Meggy Dewantara and Ronita Pane
9	15.16-15.23	C9-APT	Kombucha Fermentation from Coffee Husks with The Addition of Red Dragon Fruit (Hylocereus Polyrhizus): Analysis of Alcohol Levels and Total Soluble Solids	**Murna Muzaifa**, Syarifah Rohaya, Cut Nilda, Khairani Romaito Harahap
	15.23-15.43		Discussion	Moderator

Breakoutroom 4 : **Agricultural Product Technology (Food Science Technology) - B**
Moderator : **Sulistyo Prabowo, Ph.D**
IT Support Room 4 : **Surya Nur Rahmatullah**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	14.00-14.07	C10-APT	The Halal-Logistics Value Creation on Firm Performance in Perlis	**Hasrul Bin Hashom**, Nor Nainatulfarzuha Nor, Nor Izham Subri, and Mohd. Anas Zakwan
2	14.07-14-14	C11-APT	Formulation and Evaluation of Natural Antioxidant Lotion of Corn Peel Extract (Zea mays L.)	**Zuanta. P.**
3	14.14-14.21	C12-APT	The Effect of Kelor (Moringa oleifera) Leaves Addition on the Characteristic of Tuna (Yellowfin tuna) Fishball	**Ervika Herawati**, Dini Ariani, Anastasia Indrianingsih, Yuniar Khasanah, Muhamad Kurniadi, Rifa Nurhayati, Ndaru Februanata, and Umi Laila
4	14.21-14.28	C13-APT	The Impact of Technological Implementation Towards SMEs' Perlis Performance in Halal Industry	**Nainatul Farzuha Binti Nor,** Hasrul Bin Hashom, Nor Izham Bin Subri and Muhammad Anas Zakwan Bin Sabri
	14.28-14.48		Discussion	Moderator
5	14.48-14.55	C14-APT	Antioxidant and Antibacterial Screening of Kelulut (Hiterotrigona itama) honey from differents meliponiculture areas in East Kalimantan, Indonesia	**Suroto Hadi Saputra**, Bernatal Saragih, Irawan Wijaya Kusuma, and Enos Tangke Arung
6	14.55-15.02	C15-APT	The Characteristics of Cassava varieties Gajah (Manihot esculenta C) Derivative Products as A Thickening Agent in The Manufacturing of Tamarind Paste (Tamrindicus indica)	**Sulistyo Prabowo,** Yulian Andriyani, Agustu Sholeh Pujokaroni, Kintan Katrin, Nurmita Sari
7	15.02-15.09	C16-APT	Determination of moisture, ash, protein, polyphenolic, flavonoids, and amino acid contents and antioxidant capacity of dried Mekai (Pycnarrhena tumefacta Miers) leaf as potential herbal flavor enhancers	**Miftakhur Rohma**, Bernatal Saragih, Nur Amaliah, Kristopal,Yudha Hendriansyah Eka putra, Anton Rahmadi
8	15.09-15.16	C16-APT	Effect of Baking Temperature and Duration Towards Proximate, Crude Fiber Content and Antioxidant of Sweet Potato Snackbar Coated with Soursop Yoghurt	**Maghfirotin Marta Banin**, Uzair Nur Aziz, Maulida Rachmawati, Marwati, Aswita Emmawati
	15.16-15.36		Discussion	Moderator

Breakoutroom 5 : **Animal Sciences - A**
Moderator : **Suhardi, Ph.D & Ari Wibowo, Ph.D.**
IT Support Room 5 : **Jumadi, S.Kom**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	14.00-14.07	D1-ASC	Potential of Agricultural by-product as Ruminant Feed in North Aceh District	**Yenni Yusriani**, Nora Usrina and Mustafa Sabri
2	14.07-14-14	D2-ASC	Constant 12 and Hahslm 472319 as Universe Creation Code on Tortoise Shell in Covid Economic Era	**Aziz. R.M**
3	14.14-14.21	D3-ASC	Ameliorating Small Ruminant Complete Ration Based on Tropical Grass on Farm Level with Local Concentrate and Leaf Protein of Trees Legumes	**Selvie D Anis**, Charles L Kaunang, Malcky M Telleng , Betty Bagau and Poulla O V Waleleng
4	14.21-14.28	D4-ASC	Cases of Subclinical Mastitis in Dairy Cattle, Microbiological Quality and Residues of Antibiotic Cow's Milk: A Case Study in Tanggamus District	**Veronica Wanniatie**, Arif Qisthon, Purnama Edy Santosa, Dian Cahya Hadi, Oktora Luhur Handika, Ammar Naupal Shodiq and Dedy Yuliawan
5	14.28-14.35	D5-ASC	The Bioinformatic Analysis in the Whole Genome mtDna Sequence of Chickens (Gallus gallus)	**Suhardi** , Widya Pintaka Bayu Putra , Rofik , Servis Simanjuntak , Khoiru Indana , and Ari Wibowo
	14.35-14.55		Discussion	Moderator
6	14.55-15.02	D6-ASC	Factor Influencing the Success of Integrated Agricultural System in Farmer's Group in Boyolali Regency, Central Java	**Sutrisno Hadi Purnomo**, A. I. Sari, S. Emawati and E.T. Rahayu
7	15.02-15.09	D7-ASC	The Effect of Post-Thawing Semen Quality on Bali Bulls with Different Freezing Times	**R. Mappanganro**, Muthmainna, AH Thaha, K. Kiramang and J. Syam
8	15.09-15.16	D8-ASC	Performance of Eggs and Blood Serum Fragnant Pandan Flour (Pandanus Amarylifolius Roxb) in Laying Hens Ration	**Jein Rinny Leke**, Jacqueline T Laihad, Florencia Sompie, Cherly Sarajar and Malcky Telleng
9	15.16-15.23	D9-ASC	Mating Behavior of Ciayumajakuning Muscovy duck in the Caged Maintenance System	**Dini Widianingrum**, Tuti Widjastuti, Asep Anang and Iwan Setiawan
10	15.23-15.30	D10-ASC	Effort to Reduce Fat and Cholesterol of Quail Eggs Using Citronella Oil in Feed	**Elly Tugiyanti** and Soegeng Herijanto
	15.30-15.50		Discussion	Moderator

Breakoutroom 6 : **Animal Sciences - B**
Moderator : **Dr. Odit Ferry K, M.Si & Dr. Muh. Ichsan Harris, M.P**
IT Support Room 6 : **M.Erwan Suriaatmaja, S.P, M.P**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	15.30.15.37	D11-ASC	Effect on Making Anaerobic Fermentation of Silage Mixed Sludge Ice Cream and Dried Cassava The Quality Silage	**Ervi Herawati**
2	14.00-14.07	D12-ASC	Nutrients and Tanin Content in The Leaves of Trembesi (Samanea Saman) for Potential as Ruminant Feed	**Ahimsa Kandi Sariri**, Sri Sukaryani and Engkus AY
3	14.07-14-14	D13-ASC	Cavy husbandry: Unleashing the potential of the often-overlooked mini-livestock	**Alam Surya Wijaya**
4	14.14-14.21	D14-ASC	The Fresh Semen Quality of the Etawah Cross-Breed Supplemented with Urea Moringa Molasses Multinutrient Block	**Nursyam Andi Syarifuddin**, Muhammad Rizal, Muhammad Riyadhi, and Anis Wahdi
	14.21-14.41		Discussion	Moderator
5	14.41-14.48	D15-ASC	The Effect of Addition Lempahong (Baccaurea lanceolata) Fruit Extract on pH, Organoleptic, and Antioxidants of the Yoghurt	**Arif ismanto** and Lulu Kizana Tusani
6	14.48-14.54	D16-ASC	Technical Efficiency Analysis of Peranakan Etawah Goat Production in North Samarinda Sub-District	**Surya N.R**, R. Saputro, M.E. Suriaatmaja, A.T.Ningrum, F. Ardhani, H.Mayulu and A.Sulaiman
7	14.54-15.01	D17-ASC	The Impact of Pre-Slaughter and Slaughter Procedure on Animal Welfare and Behavior Changes in Cattle at Local Abattoir in Samarinda-Indonesia	**Ari Wibowo**, Fikri Ardhani, Apdila Safitri, Suhardi, Via Inestika, Dinar Anindyasari and Khoiru Indana.
8	15.08-15.15	D18-ASC	Performance of Cattle with Grazing System at Oil Palm Plantation Ecosystem in Serdang Bedagai Regency, North Sumatra Province	**Sri Haryani Sitindaon**, Muainah, T Syahril, Kairiah
	15.15-15.35		Discussion	Moderator

Breakoutroom 7 : **Biosciences**
Moderator : **Ir. Sopialena, M.S, Ph.D & Kadis Mujiono, Ph.D**
IT Support Room 7 : **Riza Purnama, S.Kom**

No	TIME	CODE	ARTICLE TITTLE	PRESENTER
1	14.00-14.07	E1-BIO	Plants Diversity in Degraded Peat Swamp Forest in Tengku Dacing, Kayan- Sembakung Delta, Indonesia	**Rita Diana**, Paulus Matius, Syahrinudin, and Karyati
2	14.07-14-14	E2-BIO	The Fluctuation and Correlation of Diameter Increment and Climatic Elements in a Secondary Forest of Universiti Malaysia Sarawak, Malaysia	**Karyati**, Isa B. Ipor, Ismail Jusoh, and Mohd. Effendi Wasli
3	14.14-14.21	E3-BIO	Factors Affecting The Occurrence of Logging Waste in Natural Forests in East Kalimantan	**Diah Rakhmah Sari**, P N Kedang, D I Ghozali and Ariyanto
4	14.21-14.28	E4-BIO	Land Rehabilitation by Using Sengon and Jabon to Reduce Run Off and Erosion	**Sri Sarminah**, Karyati, Tomi Hartono, and Fadillah Afandi
	14.28-14.48		Discussion	Moderator
5	14.48-14.55	E5-BIO	Coal Mining In Good Environmental Governance Perspective	**Semuel Risal**, Abner Herry Bajari, Dorthea Renyaan, Slmaet Muchsin, Anak Agung Ayu Dewi Larantika
6	14.55-15.02	E6-BIO	Strategic Planning for Sustainable Tourism Management Pangempang Beach	**Marlon Ivanhoe Aipassa**, Sam Johan Emil, Erwiantono, Rochadi Kristiningrum, Yosep Ruslim
7	15.02-15.09	E7-BIO	The Potential of Residual Processing of Indonesian Marine and Coastal Areas as Biogas Energy	**I Made Aditya Nugraha**, I.G.MN. Desnanjaya, J.S.M Siregar, L.I. Boikh
8	15.09-15.16	E8-BIO	Application of the FTIR Method Combined with Chemometrics to Differentiate Raw Materials in Leather Gloves	**Ragil Yuliatmo**, Raden Lukas Martindro Satrio Ari Wibowo and Wisnu Pambudi
	15.16-15.36		Discussion	Moderator

ABSTRACT

First Report of an Ice Cream Cone Bagworm *Manatha Conglacia* Haettenschwiler (Lepidoptera: Psychidae) in Oil Palm Plantations of Central Kalimantan, Indonesia

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ABSTRACT

Bagworm is a defoliating insect in oil palm plantations that recently became the main problem since reported can decrease the production significantly. Some bagworms had reported *Metisa plana, Mahasena corbetti, Pteroma pendula* in several areas in Indonesia. The objective of this study was to identify bagworm species (Lepidoptera: Psychidae) on oil palm plantation in PT Bumitama Gunajaya Abadi in Pangkalan Bun, Central Kalimantan, Indonesia. A total of 75 bagworms based on census results from 12 oil palm plant blocks (± 360 hectares) were collected and brought to the Pundu Entomology Laboratory for identification. The bagworm was identified as *Manatha conglacia* known as an ice cream cone bagworm based on morphological characteristics of the bag. Based on the results of the census that has been carried out, the highest population was found in block W60 with a population rate of 5.62 larvae of bagworms per frond. This new bagworm report has now become guidance for identification for type of bagworm attack in PT Bumitama Gunajaya Agro, since this bagworm can cause serious damage with defoliating as other types of bagworms.

Keywords: *Defoliating insect, Emerging bagworm, Leaf-eating caterpillar, Psychidae.*

Characteristics of Fish Waste-Based Fertilizer and its Application in Organic Sweet Corn

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ABSTRACTIndonesia is the third largest fish production in the world after China and Peru with total production almost seven million tonnes in 2018. About 30-45% of this weight is considered as fish waste and possibly transformed into organic fertilizer. This study aimed to evaluate the characteristics of organic fertilizer made of fish waste and its effects on the growth and yield of sweet corn. The experiment was conducted from September 2020 to March 2021 in Bengkulu. The characterizations of fish waste-based fertilizer were divided into physical and chemical categories. Afterward, the fertilizer was then applied in sweet corn to know its effect. Three levels of fish waste chopping size and four rates of doses and were tested by using Randomized Block Design in three replications. The main results of this research are as follow. Firstly, fertilizer made of fish waste had good physical characteristics with high N, P, and K contents and. The nutrient contents reached 5, 5, and 2% respectively for N-total, P_2O_5 and K_2O. Secondly, fertilizer made from coarse chopping of fish waste showed better influenced compared to soft and medium sizes on the growth and yield of sweet corn. Thirdly, we found that the higher the rate applied the better the growth and yield of sweet corn. Lastly, the best commercial sweet corn yield under fish waste fertilization was 27.74 t/ha achieved by applying 30 t/ha of coarse size fish waste fertilizer. This yield was significantly higher than that of applying 200 kg NPK chemical fertilizer which produced 11.27 t/ha.

Keywords: *Fish by-product, Marine, Maize, Nutrient, Production*

Effectiveness of Dolomite on Growth and Yield of Maize (*Zea mays* l.) in Dry Land

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ABSTRACT
The study had been conducted in dry land sites in East Java was in Kediri District during the rainy season I, 2018 –2019. The research was designed in RBD, 4 replicates, and 6 treatments, namely : A = without fertilizer, B = 300 Urea ha^{-1} + 400 kg NPK Phonska ha^{-1} (Recommended Rates of Inorganic Fertilizers or RRIF), C = RRIF + 1 ton dolomite ha^{-1}, D = RRIF + 2 tons dolomite ha^{-1}, E = RRIF + 3 tons dolomite ha^{-1}, and F = RRIF + 4 tons dolomite ha^{-1}. Data analysis used ANOVA (*Analysis of Variance*) and followed by DMRT test 5%. The results showed that the application of RRIF + 4 tons dolomite ha^{-1} obtained of dry seeds yield of corn 7.68 tons ha^{-1} (increased of 23.87%) from the RRIF, B/C-ratio 1.73, and R/C-ratio 2.36. Fertilizers treatment F = RRIF + 4 tons dolomite ha^{-1} showed it effectiveness with effectiveness of 174.4% (RAE > 100%).

Keywords: *Dolomite, Zea mays I., Dry land.*

Evaluation of Soil Characteristics on Coffee Land in Sinjai Regency, South Sulawesi

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ABSTRACT

The soil chemical properties were important factors influencing growth, productivity, quality, and coffee flavour. The research aimed to evaluate the soil characteristics of coffee land at different growing altitudes in Sinjai Regency, South Sulawesi. The soil samples were collected in June 2019, within the canopies of the coffee tree to the depth of 15 and 30 cm at each of 1200 m a.s.l. (Botolempangan village) and 1400 m a.s.l. (Balakia village) for Arabica coffee, while Robusta coffee at an altitude of 700 m a.s.l. (Arabika village). Preparation and analysis of the soil samples were conducted at the Laboratory of Chemical and Microbiological Testing, Center for Plantation Based Industry, in Makassar. The result showed that soil properties such as pH, C-organic, N-total, C/N ratio, Cation Exchange Capacity, texture and particle size of soil different for each altitude of the coffee land.

Keywords: *Sensory, Chemical, Arabica Coffee, Altitude.*

Benzyl Amino Purine (BAP) Growth Regulator Application and Shoot Origin Stem Lai (*Durio kutejensis*) Against Growth Durian (*Durio zibethinus* Murr) Grafting Seedlings

Syamad Ramayana*, Bambang Supriyanto, Widi Sunaryo, Susylowati and Sabeth Adiastie

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ABSTRACT

This study aims to determine the concentration of Benzyl Amino Purine (BAP) and the exact origin of scion shoots to optimize the growth of durian (*Durio zibethinus* Murr) grafting seedlings. This study was arranged in a completely randomized design (CRD) consisting of two factors with four replications. The first factor is the concentration of BAP, consisting of four levels, namely: 0 ppm, 125 ppm, 250 ppm and 375 ppm. The second factor is the origin of shoots, consisting of 3 levels, namely 10 cm from the shoot, 20 cm from the shoot and 30 cm from the shoot. The data obtained were analyzed using variance and continued with the Least Significant Difference (LSD) test at the 5% level. The results showed that there was an interaction between the concentration of BAP treatment and the origin of lai (*Durio kutejensis*) shoots on the growth of durian seedlings. The interaction of 125 ppm BAP concentration and 30 cm shoot origin from the shoot were the best treatments in optimizing the growth of durian seedlings. Giving BAP concentration affects the growth of durian seedlings. The concentration of BAP 125 ppm is the best treatment concentration in optimizing the growth of durian grafting seedlings. The use of stem shoots from lai (*Durio kutejensis*) has an effect on the growth of durian seedlings. The origin of scion shoots 30 cm from the shoot is the best treatment of shoot origin in optimizing the growth of durian grafting seedlings.

Keywords: *Durian (Durio zibethinus), Lai (Durio kutejensis)), BAP, Origin of shoots, Grafti*

Investigation of C-Organic Content, Nitrogen, Phosphorus, Potassium Nutrients, pH Soil and C/N Ratio of Tidal Rice Fields in Sidomulyo Village, Anggana District, Kutai Kertanegara Regency, East Kalimantan (Series 1)

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ABSTRACT

The purpose of this study was to investigate the content of organic C, Nitrogen, Phosphorus, Potassium nutrients, pH soil and C/N ratio in tidal paddy fields in Sidomulyo Village, Anggana District, Kutai Kertanegara Regency, East Kalimantan; use for productivity sustainability conservation; and identify the current fertility condition of the land and for sustainable management actions. The research was carried out by taking 5 soil samples for each specified tidal field, using a soil drill with a depth of ±30 cm, taking 1 kg each in a composite manner and chemically analyzing at the Soil Science Laboratory, Faculty of Agriculture, Mulawarman University. The results of laboratory analysis provide information that: pH soil parameter, all samples showed very acidic with an average acidity number of 4.28 (lowest 2.13, highest 3.88), two categories of C-organic content parameters identified, namely the moderate category of 4 samples, (ie: 2.13 %, 2.71%, 2.91%, and 2.93%); and high category, totaling 6 samples (ie: 3.23%, 3.27%, 3.30%, 3.36%, 3.45%, and 3.88%); Total Nitrogen content parameters were also identified in the medium category, totalling 7 samples (0.27%, 0.35%, 0.38%, 0.39%, 0.48%, 0.48% and 0.48%); high category, totaling 3 samples (0.31%, 0.34%, 0.58%); parameter of C/N ratio, all 10 samples showed low category; Parameter of Phosphorus available shows variation, in the low category there is 1 sample (ie 6.73 ppm), the medium category is 1 sample (10.18 ppm), the high category, there are 2 samples (ie 14.27 ppm and 14.82 ppm), very high category, as many as 6 samples (18.36 ppm, 23.27 ppm, 17.64 ppm, 32.36 ppm, 17.45 ppm, and 15.64 ppm), Parameter of Potassium available, all samples show a very high category.

Keywords: *Investigation, C-organic, Tidal rice field.*

Nutritive Value of Botanical Fraction in Maize By-Products from Various Varieties

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ABSTRACT

Study was conducted to evaluate botanical fraction from three varieties of maize by-products. Maize varieties evaluated were Bisi 816, Pioneer 12 and Bima2 which was obtained from different locations. The plants were harvested at grain maturity by cutting the stalk 10 cm above ground level. The stover was partitioned based on its botanical fraction into cobs and stover component. The cobs were separated into grain, earhusk and cob, while stover was separated into leaf and stem. Each fraction was cut and dried then ground and ready to be evaluated. The evaluation done was chemical analysis (crude protein, neutral detergent fibre, acid detergent fibre, lignin, gross energy, metabolizable energy) and in vitro dry matter and organic matter digestibility (IVDMD and IVOMD). The study was conducted in randomized complete design in factorial 3x4 (three varieties and 4 botanical fractions). The study revealed that leaf fraction had highest content of crude protein (CP) in all varieties with ranges 6.1-11.58%. Though earhusk has lower CP content than leaf, it has high IVDMD and IVOMD in all varieties. The highest in vitro digestibility among botanical fraction were in the leaf and ear husk. From this study can be concluded that the good nutritive quality of botanical fraction in all varieties as ruminants feed were in leaf and earhusk.

Keywords: *Nutritive value, Botanical fraction, Maize, Varieties.*

Harvest Time and Secondary Processing on the Quality of Moringa Leaves (*Moringa oleifera*)

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ABSTRACT

The quality of food and feed from plants is determined by the time of harvest and handling management after harvest. Moringa is potential in terms of nutrition, so it is called as super food, also has the potential as super feed. This study aimed to analyze the nutritional quality of Moringa leaves with different harvesting times and the length of time before secondary treatment by drying. Two harvesting time (morning and evening), and the length of time before secondary treatment with drying were arranged in completely randomized design with 3 replicates. The variables observed were the nutritional quality of Moringa leaves which include yield, moisture, ash, crude protein, crude fat and crude fiber content (proximate analysis). Yield, ash and crude fiber content significantly ($P<0.05$) affected by time of harvest and the length of time before secondary treatment. This study concluded that the quality of moringa leaves is maintained in the morning harvest and with immediate drying process after harvest. The quality of moringa leaves tended to decrease with the delay of drying process after harvest in evening harvest.

Keywords: *Drying, Moringa leaves, quality, time of harvest.*

Study on Genetic Variability and Heritability in F5 Segregating Generation for Yield and Its Compenents in Yardlong Bean

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ABSTRACT
Yardlong bean is one of the important vegetable crops in Indonesia. Pod of yardlong bean has various colour such as green, whitish green, red and purple. Artificial cross was done between purple and whitish green pod to get F1. First filial (F1) were advanced to F5 segregating generations for variability and heritability. The research objective was to estimate variability and heritability in F5 populations. There were 360 plants of F5 population and 20 plants of parent. Characters measured were number of leaf, pod length, number of pod, number of seed per pod, number of seed per plant and weight of 100 seeds. The results showed that genotypic coefficients of variation was low for all characters. High heritability were obtained for number of leaf, number of pod and number of seed/plant. Pod length, number of seed/pod and weight of 100 seeds had moderate heritability.

Keywords: *Genotypic coefficients of variation, Purple pod, Whitish Pod.*

Concentration of N, P and K Nutrients in the *Eucalyptus pellita F.Muell* Tree Components in East Kalimantan, Indonesia

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ABSTRACT

The purpose of this study was to investigate the concentration of N, P and K nutrients in the *Eucalyptus pellita* F.Muell tree components. Tree component samples were taken from Eucalyptus pellita F.Muell at 1-, 3-, 5 and 13 years-old plantations. Three circular plots (r = 12.6 m) were established for each plantation age for tree inventory. Census was applied for tree diameter inventory and 24 representative trees were harvested for nutrient measurement. The N analysis was done with Kjeldahl method, meanwhile for P was measured with Spectrophotometer and K was measured with Flamephotometer. The result showed that the highest concentration of N nutrients at the age of 1-year old was found in leaf (11.03 mg/g), the age 3-years old was found in leaf (13.63 mg/g), at the age 5-year old was found in leaf (12.92 mg/g) and the age 13-year old was found in leaf (13.13 mg/g). The highest concentration of P nutrients at the age of 1-year old was found in bark branch+twig (0.30 mg/g), the age 3-years old was found in leaf (0.40 mg/g), at the age 5-year old was found in bark branch+twig (8.65 mg/g) and the age 13-year old was found in bark stem (1.27 mg/g). The highest concentration of K nutrients was at the age of 1-year old was found in bark branch+twig (14.05 mg/g), the age 3-years old was found in leaf (12.12 mg/g), at the age 5-year old was found in leaf (6.66 mg/g) and the age 13-year old was found in leaf (9.83 mg/g). The concentrations of nutrient in the tree components of Eucalyptus pellita is affected by species, age of the tree and type of soil.

Keywords: *Nutrient, N, P, K, Eucalyptus, East Kalimantan.*

Fruit Performance and Edible Part Nutritional Value Analysis of Three Lai-Durian (*D.Zibethinus* x D. *Kutejensis*) Plant from East Kalimantan, Indonesia

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ABSTRACT
The large number of Durio species that grow in Kalimantan illustrates that this area is the most important distribution center for durian relatives. Two of the best-known edible durians in East Kalimantan are Durian (*Durio zibethinus*) and Lai (*Durio Kutejensis*). However, as a plant with a cross pollination mechanism, there are many results of natural crosses between the two. The study aimed to identify fruit performance and edible part nutritional value analysis of three Lai-Durian plants in Loa Kulu, Kutai Kertanegara, East Kalimantan Province, Indonesia as a potential superior commodities from East Kalimantan. This research was carried out by collecting data and information about Fruit performance and edible part nutritional value three *D. zibenthinus* x *D. kutejensis* plants. The results of the study successfully identified fruit performance and edible part nutritional value analysis of three Lai-Durian plants in Loa Kulu, Kutai Kertanegara, East Kalimantan Province. The three potential superior plants has some similar fruits performance on Skin fruis color, fruits size, flesh taste, and it has some different fruits performance on fruits shape, flesh aroma, Fruit spine shape, and some edible part nutritional value.

Keywords: *Tropical rain forest, Local fruit, Fruits performance, Edible part nutritional value, East Kalimantan.*

Paddy Farm Income in Relation to Experience by Geographical Regions in East Kalimantan, Indonesia

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ABSTRACT

The low level of paddy farm income is serious problem in the development of paddy farming in East Kalimantan. The results of some previous studies showed experience has ability to influence farmer income, however limited studies discussed about geographical regions. The objectives of this study were to analyze the paddy farm income, to investigate the paddy farm experience, and to explore the relations among paddy farm income, paddy farm experience, and geographical regions. The study locations were Subcities/Subregencies of North Bontang, South Bontang, Tenggarong Seberang, Muara Muntai, Loa Janan, Waru, Penajam, and Babulu, Province of East Kalimantan, Indonesia. Primary data were collected by conducting the interviews to total 380 respondents. Paddy farm income and paddy farm experience are different among paddy farmers in eight regions of East Kalimantan, Indonesia. Paddy farm experience and geographical regions, collectively, very significantly affect paddy farm income in East Kalimantan, Indonesia, ceteris paribus. There are weak relationships between paddy farm income and paddy farm experience by geograpical regions.

Keywords: *East Kalimantan, Experience, Farmer Income, Paddy Farm.*

Sensitivity Analysis of Swiftlet Farming in Kota Bangun, Kutai Kartanegara

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ABSTRACT
Swiftlet farming is a high-risk business. However, given the level of income (as measured by financial viability), most swiftlet farmers take the risk. Swiftlet farming is a business that lasts for a long time. During this period there are several changes that occur, which will affect the viability of the business. These changes include costs, selling prices and production. This research aimed to analyze the sensitivity of swiftlet farming in Kota Bangun Subdistrict, East Kalimantan, Indonesia. This research used quantitative analysis method. Data were collected using purposive sampling to determine the location dan sample of swiftlet houses, as well as in-depth interviews with respondents. The sensitivity analysis of Swiftlet farming was analyzed using the net Benefit-Cost Ratio (net B/C), Net Present Value (NPV), Internal Rate of Return (IRR) and Payback Period (PP) methods, assuming an increase in operating costs of 15 % and a 30% reduction in benefits. The results showed that Swiftlet farming in Kota Bangun District is still financially feasible if there is an increase in operational costs by 15% or a decrease in benefits by 30%, as well as an increase in operational costs and a decrease in benefits occur simultaneously.

Keywords*: Benefit, Cost, Financial Feasibility, Sensitivity Analysis, Swiftlet*

Performance of Nutmeg (*Myristica fragrans*) Post Harvest and Marketing in East Halmahera Regency

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ABSTRACT

Nutmeg *(Myristica fragrans)* is an evergreen tree indigenous to Banda Island Indonesia. In 2018 nutmeg production in Indonesia was 36,242 tons from 202,325 ha land, whereas the biggest production from the center production i.e. North Maluku Province. This aim of study s was to determine the performance of nutmeg postharvest and marketing at the farmer level in East Halmahera Regency. Data were obtained from thirty farmers as respondents with purposive sampling method using questionnaires. Quantitative data were analyzed descriptively. Observation components were included weight of nutmeg, fruit flesh, wet nutmeg, dry nutmeg, wet mace and dry mace. The results showed that harvesting in these area were carried out 2-3 times a year. The harvest period are January-August, March-September and April-December with the average production in each harvest time was 1-3 kg per tree. Nutmeg was harvested using a pole and all fall nutmeg were collected. as About 70% farmers were processed the nutmeg directly after harvesting. The postharvest procession was separating and drying the nutmeg. The nutmeg was separated in three parts, i.e., the nutmeg pulp, seed and mace. The drying procession was carried out by 60% of farmers that was different for each part, the nutmeg seed need 5-6 days and the mace need 1 day under sun shine. The percentage of nutmeg fruit components was varied with a range nutmeg pulp was 85.64-88.69%, fresh seeds was 9.45-12.04%, dry seeds was 6.45-8.28%, fresh mace was 1.40-2.51% and dry mace was 0.66-1.46%. Nutmeg seeds are sorted and graded by separating whole, wrinkled and crushed seeds. Marketing channels consist of village collectors, traders from Maba Regency and traders from outside the district, generally from Ternate. All harvested products were sent to Ternate in the form of seeds and mace.

Keywords *: Postharvest, Nutmeg Seed, Mace, Grading, Marketing Chain*

Analysis of Added Value in the Processing Business of Palm Plant Products (Arenga pinnata Merr) in Minta Village, Penyinggahan District, West Kutai Regency.

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ABSTRACT
Sugar palm is one of the plantation crop commodities that has a high potential economic value. Almost all parts of the palm plant can be used, starting from the roots, leaves, stems, fruit, and palm fiber. The purpose of this study was to analyze the income and added value of the palm processing business in Minta Village, Penyinggahan District, West Kutai Regency. This research was conducted on the business of processing sugar palm products in Minta Village, Penyinggahan District, West Kutai Regency from February to April 2021. The sampling method used was saturated / census sampling. The number of respondents was 31 respondents who cultivated sugar palm plants, from 31 respondents there were 5 respondents who also cultivated Fresh Nira, and from 31 respondents there was 1 respondent who also cultivated Artificial Sugar. And from 31 respondents all respondents cultivate Palm Sugar. The data collection method was done by means of observation and direct interviews with respondents. The data analysis method used is the analysis of costs, revenues, income and added value. The results showed that the income from the business of processing sap into palm sugar with an average of Rp. 365,119.84 months^{-1} respondent^{-1}, income from processing the sap into fresh sap with an average of Rp. 32,473.33 months^{-1} respondent^{-1}. And the income from the business of processing sap into ant sugar with an average of Rp.107,388.9 months^{-1} respondent^{-1}. Processing sap into palm sugar provides added value with an average of Rp. 2,859.18 kg^{-1} month^{-1}, processing sap into fresh sap provides added value with an average of Rp. 7,500 liter^{-1} month^{-1}, and processing sap into ant sugar provided added value with an average of Rp. 6,750 kg^{-1} month^{-1}. Based on the results of the research, the added value of sap as raw material for processing sugar palm products through the value added analysis method, the business of processing palm products was able to get an added value of Rp. 7,500 liters^{-1} month^{-1} in the fresh sap business, the sugar ant gets an added value of Rp. 6,750 kg^{-1} month^{-1}, and in palm sugar it gets an added value of Rp. 2,859.18 kg^{-1} month^{-1}.

***Keywords**: Palm Products, Income, and Value Added*

Role of The Agriculture Sector in Poverty Reduction in East Kalimantan

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ABSTRACT
The agricultural sector provides support for food availability, employment, and increases household income in the urban or rural area. Household income determines expenditure and becomes the basis for determining the poverty line. East Kalimantan economy is still dominated by the mining sector. The development of agriculture has shifted the contribution of the sector to Gross Domestic Regional Product (GDRP). The research purpose was to analyze the role of the agriculture sector in poverty reduction. The data was time-series data of poverty and GDRP of East Kalimantan from 2011 to 2020. Descriptive analysis and regression analysis were used in this research. The results indicated that the poverty rate was average 0.10 percent, the urban poverty rate was 4.77 percent, and the rural poverty rate was -3.32 percent. The contribution of the agriculture sector to GDRP was average 7.19 percent and the average growth of agriculture GDRP was 9.06 percent. Average agricultural labor absorption was 23.82 percent from the working population, 76.99 percent in rural and 23.01 percent in urban. The agriculture sector has a statistically significant impact on reducing rural poverty. The coefficient regression was -0.1771 and t-value -7.78. It is significant at level 5 percent. This implies that agriculture can be reducing poverty by labor absorption, increasing labor productivity, and shifting agriculture towards increasing products that provide added value.

Keywords: *Poverty, GDRP, Agriculture, Urban, Rural.*

Farmer Group Conformity In Banyumas Regency: A Comparative Study Based on the Number of Members and the Long Establishment of the Beef Farmer Groups

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ABSTRACT

Forming a farmer group is one of the efforts to improve the ability of farmers in managing their cattle business. A farmer can not only learn from other members but also work together to achieve optimal livestock production. Certainly, the members need to have conformity to work in a group. This study aimed to compare group conformity based on the number of farmer members and how long a group has been established. The study used a survey method. The sample areas have been chosen by purposive sampling technique by selecting the large population of beef cattle in Kedungbanteng. A total of four villages have been selected namely Kebocoran, Kutaliman, Windujaya, and Kalisalak Village. Choosing the sampling of groups and respondents has been carried out using the census method. The selected groups are Maju Sentosa, Sakeco, Lembu Jaya, and Sido Mulyo farmer groups, with respondents as many as 60 farmers. The data has been presented by descriptive method and analyzed by Mann Whitney test. The results showed that Maju Sentosa and Sakeco groups had very high conformity, while Sido Multo and Lembu Jaya groups had a moderate level of conformity. Thus, there was a significant difference in conformity based on the number of members and the duration of the group's existence.

Keywords: *Farmer Group, Beef Cattle Farmer, Group Conformity, Kedungbanten, The Number Of Members*

Analysis of the Chemical Properties of Bread from Grain Germination Rice Flour and Parboiled Rice Flour

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ABSTRACT

Rice is a source of daily calorie intake for Indonesians. Rice contains nutrients needed by the body, but with the process of milling grain or post-harvest handling, the resulting nutrient decreases. Therefore, one of the post-harvest processing methods developed for parboiled and germinated rice aims to maintain and improve food nutrition. Germinated unhulled rice contains higher levels of protein, ash and vitamin B1 than non-germinated rice. Parboiled rice contains higher levels of protein, fat content and ash (minerals) than non-parboiled rice. The food processed product in this study was bread. The choice of bread in this study is because bread has now become the second staple food after rice and is a breakfast menu among Indonesians. The purpose of this study was to determine the effect of using rice flour from unhulled germination and parboiled rice flour on the resulting bread products, chemical properties of bread products and the level of consumer acceptance of bread products with the use of rice flour from unhulled germination and parboiled rice flour. This research was conducted in four stages, stage I was carried out by grain germination until the length of the sprouts reached 0.2 cm, stage II was carried out by making rice flour from grain germination, stage III was carried out by making parboiled rice flour and stage IV was carried out making bread products. The results showed that the process of grain germination and the process of unhulled rice which was then processed into rice flour had an effect on the resulting bread products. Bread made from rice flour from the germination of grain and parboiling processes has nutritional content that is good for health.

Keywords: *Grain germination, Parboil, Rice flour,Bread*

Product Development Based on Rice Flour Germinated to the Manufacture of Vermicelli

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ABSTRACT

Rice is a staple food of Indonesian society that plays an important role for daily consumption patterns. The nutritional content contained in rice can be lost due to the post-harvest stages of grain into rice. Loss of rice content can be prevented by a method called grain germination process. Grain germination is able to maintain the nutritional content in rice. but, in the process of grain germination, physical quality of rice decreases after grinding, where the percentage of head rice becomes decreased and vice versa the percentage of broken grains is increasing. Germinated rice resulting from germination process is processed into nutritious rice flour and made vermicelli to reduce the physical quality of rice. Vermicelli is one of the glutenfree flour-based Chinese foods that has a noodle-like shape but is thinner than noodles. Tepung without gluten is perfect for people who are allergic to the presence of gluten. The purpose of the study was to determine the influence of the use of rice flour resulting from the germination process of grain on vermicelli products produced, physical and chemical properties of vermicelli products and the level of consumer acceptance of vermicelli products with the use of rice flour resulting from grain germination. This research was conducted in three stages, stage I is carried out grain germination until the length of sprouts reaches 0.2 cm, phase II is done making rice flour and phase III is done making vermicelli products. Results indicate that from the process of germination of grain which is then processed into rice flour gives an influence on the resulting vermicelli. Vermicelli with rice flour basic ingredients resulting from the process of germination of grain has a good nutritional content for health.

Keywords: *Germination, Rice Flour, Vermicelli*

A Effect of Decaffeination and Re-Frementation on Level of Caffeine, Clorogenic Acid and Total Acid in Green Bean Robusta Coffe

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ABSTRACT
Caffeine, chlorogenic acid, and total acid are important compounds affecting the taste of coffee. The purpose of this study is to determine the effect of decaffeination and refermentation on levels of caffeine, chlorogenic acid, and total acid in green bean of robusta coffee. This study consisted of several treatments, namely: green beans without treatment, green beans re-fermentation without decaffeination, decaffeinated green beans without fermentation, and decaffeinated green beans of coffee by re-fermentation with the addition of mucilage analogs. The decaffeination process used the Swiss Water Process (SWP) method, and re-fermentation used a mucilage analog of the blend of purple sweet potato and passion fruit pulp. The caffeine and chlorogenic acid content were determined using UV-VIS spectrophotometry, and total acid was determined using acid-base titration methods. The results were showed that the decaffeination and re-fermentation processes affected the levels of caffeine, chlorogenic acid, and total acid of green bean coffee. Caffeine concentration ranged from 1.04% (green bean coffee without fermentation treatment) to 2,6% (green beans coffee without treatments). The results of the chlorogenic acid analysis showed that the highest amount of green beans coffee without treatment (2.13%) and the lowest found in advanced fermented green beans coffee without decaffeination (1.07%). According to the result of total acid, the highest total acid was green beans coffee without treatment (0.22%), and the lowest was decaffeinated green beans coffee without fermentation (0.16%).

Keywords: *Green bean coffee, Decaffeination, Caffeine, Chlorogenic acid, Total acid*

Preparation of Sea Cucumber (*Holothuria scabra*) Powder: Effect of Pre-treatment on Its Nutritional, Antioxidant Activity and Morphological Characteristics

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ABSTRACT
Sea cucumber (*Holothuria scabra*) has a prospect of being one of the nutritious ingredients because it contain complete nutrients, including carbohydrates, essential fatty acids and amino acids, as well as several bioactive components that are believed to have functions as antioxidants, antibacterial, anti-fungal, and anticoagulant. The application of sea cucumber products in the food formulation may be expanded if it is made in the form of powder. This study was aimed to evaluate the application of three pre-treatment in preparing sea cucumber powder, and evaluated the effects on its nutritional content, antioxidant activity, and morphological properties. Three different types of ingredients, namely yam (*Dioscorea hispidia* Dennst) tuber extract, $NaHCO_3$ solution, and papaya leaf extract, were added to the fresh sea cucumbers. Then, they were heated at 70^oC for 20 minutes in sea water, smoked, dried, and ground into powder. The results showed that the nutritional content of sea cucumber flour that was given papaya leaves extract had a higher protein content (59.33%) and higher ash content (14.71%) compared to the other treatments. The pre-treatment with papaya leaves extract had also given the strongest antioxidant activity. The morphological characteristics were observed with Scanning Electron Microscope (SEM).

Keywords: *Papaya leaf, Sea cucumber powder, Yam tubers extract.*

Nitrogen Fertilizer Use Efficiency of Irradiated Mutant Rice

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ABSTRACT

The carrying capacity of rice plants to meet national food demand is inseparable from effective and efficient cultivation techniques. The need of rice plants for fertilizer is a recurring problem, due to the farmers' tendency to apply fertilizer, especially urea, at the excessive doses. Balanced fertilizer practice is currently a trend encouraged by the government, because the lands that receive intensive chemical fertilization rate decreased in its fertility and health. It is indicated by the low soil acidity value (tends to be acidic to acidic) and the low soil organic carbon (SOC) content (<1%). This case happens in most areas of intensive rice cultivation in Indonesia. The principle of balanced fertilization is to provide a number of nutrients in accordance with the amount of plant needs. Determining the nutrients needed by plants can be done in several ways, including by knowing the efficiency level of plants in utilizing the nutrients that are given or added to the soil. The research objective was to determine the fertilizer dosage with the optimum efficiency level for lowland rice plants. The experiment was carried out in the rice fields of Muara Experimental Station, Bogor, using Batan's mutant rice variety and mutant line, and national rice variety as a comparison. Randomized Complete Block Design in factorial pattern was using in the experiment. As the first factor is rice variety, consisting of 3 levels factors: 1). Sidenuk mutant rice; 2). mutant line rice; and 3). Ciherang national rice variety. While the dose of urea as second factor consists of 4 levels: 1). no urea fertilizer; 2). urea at a dose of 100 kg N / ha; 3). urea at a dose of 200 kg N / ha; and 4). urea at a dose of 300 kg N / ha. Stable isotope techniques N-15 is used to determine the efficiency of nitrogen uptake by rice plants. The results showed that the highest nitrogen use efficiency of rice varieties owned by Sidenuk amounted to 22.76%; Ciherang variety was 22.30%; and the mutant lines were 17.19%. This efficiency was obtained from the application of urea fertilizer at a dose of 100 kg N / ha (Sidenuk and Ciherang) and 200 kg N / ha (mutant lines).

Keywords: *Nitrogen use efficiency, Isotope stable N-15, Lowland rice, Rice mutant, Sidenuk variety*

Chemical Analysis and Microbial Population of Belacan Depik, Fermented Fish Product of Rasbora Tawarensis

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ABSTRACT
Depik (*Rasbora tawarensis*) is a typical endemic fish of Lake Laut Tawar in Central Aceh Regency, Indonesia. Local people process depik fish into fresh, dried and fermented forms. Femented depik fish called belacan depik, which is one of favorite food by local community. However, research on the quality of depik belacan and the microorganisms involved in its fermentation is still very limited. This research is an exploratory laboratory research that aims to analyze the quality of fermented depik fish and its microoganism population. The parameters analyzed consisted of nutritional analysis in the form of proximate analysis (moisture, ash, protein, fat and fiber content) and microbiological analysis through total plate count (TPC) analysis of total mesophilic bacteria, lactic acid bacteria and fungi. The results showed that fermented depik fish had moisture content of 45.56 ±0.23%, protein 22.06 ±0.95%, fat 4.33 ±0.27%, ash 10.83 ±0.43% and fiber 1.58 ±0.11%. The population of microorganisms was dominated by mesophilic bacteria, followed by fungi and lactic acid bacteria. The presence of a population of depik belacan microorganisms is expected to be the basis for further research to characterize and identify microorganisms involved in depik fish fermentation.

Keywords: *Depik, Aceh Regency, Microbial population, Endemic fish*

Addressing the Sustainable Agricultural Agenda: Gac Fruit Benefit in Qur'an and Value Chain Perspective

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ABSTRACT

Gac fruit is one of the exceptional varieties of fruits that contain numerous secrets and wonders; which according the text of Qur'an, the benefits of fruits in paradise frequently discussed. Research on this type of fruit contributes to the sustainability of this natural resource in a various sector particularly in medical and health. Gac fruit (Momordica cochinchinensis Spreng) is one of those "super" fruits that has been widely employed in traditional healing and ancient medicine because of its phytonutrient- a rich section such as aril, seeds, pulp, and peel. But the full extent of Gac fruit's health advantages is unknown or underappreciated. Gac fruit has a substantially larger amount of antioxidants than other fruits. Gac fruit has much more lycopene and comparatively high levels of -carotene than other fruits. Scientific finding shows that phytochemicals present in Gac fruit, particularly carotenoids, may have health benefits. However, since prior studies have solely concentrated on the content and nutrients of Gac fruit, the value chain ecosystem for this valuable product has not been explored through research. Therefore, this concept paper will literately focus on the nutritional position of this fruit according to the text in the Quran as well as the exploring the value chain that can strengthen the viability of the product. The findings of the study are expected to provide a list of Gac fruit products value chain as part of a large -scale source of food security and sustainability, as well as to reinforce the national aim in the Sustainable Development Goal led by the Ministry of Agriculture and Food Industry (MAFI).

Keywords: *Gac fruit, Al-Quran, Value-chain, Health food-based*

Sensory and Chemical Properties Characteristics of Cookies Products from the Formulation of Red Rice Flour (*Oryza nivara* l.) and Mocaf Flour (Modified Cassava Flour)

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ABSTRACT

The enhancement of nutrition intake based on protein and carbohydrates in pastries is expected to increase nutrients for society. Mocaf flour is a local commodity that can be used to make pastries which can replace the function of wheat flour. Mocaf flour contains low protein (1.2%) to in crease the protein content in pastries and then, the red rice flour is added in the making of pastries to produce the good quality. The Red rice (*Oryza nivara*) and mocaf flour (Modified Cassava Flour) is a processed which is quite potential in food diversification. Thus, the purpose of this study determined the effect of the formulation between Red rice flour and mocaf flour on the sensory and chemical properties of the pastries. Furthermore, this study used factorial Completely Randomized Design (CRD) with 5 treatments (0: 100, 25:75, 50:50, 75:25, 100: 0 grams) and 4 replications. The data is analyzed using ANOVA, then for the sensory data, it processed using the KruskalWallis test. The data showed the real difference, continued by Tukey (HSD) test at 5% level. The observation of parameter is include the sensory test and the water content test, the ash content, the protein content, the fat content and the carbohydrate content. Thus, the results of this study showed that the formulation of the red rice flour and mocaf flour had no effect on the water content, the ash content and the fat content, but it had a significanly effects on protein, carbohydrate, hedonic test and the quality. The best treatment was found in the formulation of red rice flour and mocaf flour at 75:25 (P4) with the water content 2.35%, the ash content of 1,99%, the fat content 14.97%, the protein content of 9.66%, and the carbohydrate content 70.27%. Meanwhile the sensory test produced the colors of hedonic, the aroma, textures, and tasteis on the liking scale (like). The hedonic quality colored (rather brown; rather flavorful of the red rice, then the textures is crisp and slightly flavored of rice flour).

Keywords: *Cookies, Red rice flour and Mocaf flour*

Kombucha Fermentation from Coffee Husk with Addition of Red Dragon Fruit (*Hylocereus polyrhizus*): Analysis of Alcohol Content and Total Soluble Solid

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ABSTRACT

Dried coffee skin (coffee husk) can be used as a raw material for making kombucha. This study aims to examine the alcohol content and total soluble solid of kombucha made from coffee husk with the addition of dragon fruit with different fermentation times. The addition of fruit in kombucha fermentation is currently widely used to get the sensation of a carbonated drink. The addition fruit also can increase the amount of alcohol present in kombucha. In connection with the Indonesian Ulema Council (MUI) fatwa regarding the halalness of foods/drinks containing alcohol, the increase in alcohol content in kombucha fermentation with the addition of fruit needs special attention. This study used a factorial randomized block design (RBD) consisting of 2 (two) factors, namely the fruit treatment used (B), consisting of 2 levels, namely B1 = fruit slices and B2 = fruit juice. The second factor is the second fermentation time (L), consisting of 4 levels, namely: L1 = 2 days, L2 = 4 days, L3 = 6 days and L4 = 8 days. The results showed that fruit treatment (P) had a very significant effect on the ethanol content of kombucha cascara. The length of fermentation has a very significant effect on the ethanol content and total soluble solids of kombucha cascara. The interaction of the two treatments had a very significant effect on the alcohol content of kombucha cascara. The alcohol content of kombucha cascara with the addition of dragon fruit ranged from 0.60-1.31% with an average of 0.84% and the total soluble solids ranged from 9.87-11° Brix with an average of 10.42° Brix. The alcohol content of kombucha cascara is still higher than the minimum alcohol content stipulated by MUI Fatwa No. 10 of 2018. Further research is needed to reduce the alcohol content of kombucha with fruit added in the second fermentation.

Keywords: *Kombucha, Coffe husk, Dragon fruit,Alcohol content, Total soluble solid*

The Relationship of Halal-Logistics Value Creation on Firm Performance in Perlis

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ABSTRACT

Malaysia as one of leading country in halal industry shows tremendous achievement in global market by providing Sharia compliance products and services. Therefore, with almost 90% populated by Malay Muslim, Perlis provide vast market value to product and service related to halal in term of food and beverage, agricultural and basic agricultural industry; not only cater the national need, but also regional and international market. The ability of the state to maintain in promoting halal destination will enhance their position as tourist destination and boost up the standard living for locals and state procurement. The research also to support the Sustainable Development Goals (SDG) No.12 : Responsible Consumption And Production. Therefore, the purpose of the research is to provide the finding in the implementation of Halal-Logistics Value Creation (HLVC) among Micro, Small and Medium Enterprise (MSMEs) in Perlis and the effectiveness of HLVC toward firm/ business performance.

Keywords: *Halal, Logistics, Firm, Performance*

Formulation and Evaluation of Natural Antioxidant Lotion of Corn Peel Extract (*Zea mays* L.)

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ABSTRACT

Corn peel extract is formulated in the form of lotions used stearic acid, setyl alcohol and liquid paraffin. Concentration Corn peel extract was used 1%, 5%, and 15%. Corn peel (Zea mays L.). Antioxidants lotion activity assay was DPPH (1,1-difenil-2-pikrilhidrazil) method. Physical evaluation of lotion based on parameters, such as organoleptis, homogeneity test, pH assay, spreadibility, stability test. Corn peel extract lotion has pH 5, thick shape, dekcate taste, candy's arome. The colour of milk (base), the colour of bones (1% consentration), the colour of milk coffee (5% consentration) and mocca colour (15% consentration). The spreadibility of Corn peel extract lotion with concentration 1%, 5%, 15% were 5,55cm, 5,73cm, 4,83cm, respectively. Corn peel extract lotion stable in room temperature or low temperature (2-8°C). The Corn peel extract lotion with concentration 15% have high antioxidant activity.

Keywords : *corn skin peel, antioxidant, lotion, DPPH*

The Effect of Kelor (*Moringa oleifera*) Leaves Addition on the Characteristic of Tuna (*Yellowfin tuna*) Fishball

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ABSTRACT
Indonesia has many potential marine source, esp. tuna (*Yellowfin tuna*) fish, and biodiversity, esp. kelor (*Moringa oleifera*) leaves. Tuna fish is a very potential protein source which can be develop in many potential food product, such as fishball. This research was conducted to determine the effect of kelor leaves addition on the characteristic of tuna fishball. The fishball were made from tuna fish, mixed with local flour, i.e. modified cassava flour (mocaf) flour, tapioca flour, and sago flour. Fresh kelor leaves was added to fishball with three different concentration (10%,20%,30%) and followed by the evaluation of chemical characteristic, including water content, ash content, protein content, fat content, carbohydrate content, and sensory characteristic, including hedonic test and descriptive test. The chemical analysis of the fishball showed that the addition of kelor leaves increased the water content to 4.84%, protein content to 7.25%, and decreased the fat content to 0.18%. The most preferred fishball product from the sensory analysis was the fishball with 10% kelor leaves addition. The hedonic sensory test showed that the overall acceptance of the fishball with 10% kelor leaves addition was not significantly different with the fishball without kelor leaves addition. This study indicated that a healthy fishball could be made from tuna fish mixed with local flour and added with kelor leaves.

Keywords: *Fishball, Kelor leaves, Mocaf flour, Tuna fish*

Adaption of Technological Implementation Towards Smes' Perlis Performance In Halal Industry

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ABSTRACT

Adaption of Information Communication Technology (ICT) among SME's is becoming more important in enhancing the holistic competitiveness in halal market challenging. Today, Halal food industry is rapidly growing and has contributed to the Malaysia's economic development. Small Medium Enterprise (SME) has taken this opportunity to aim for the achievement in halal food industry. This paper aims to examine the adaption of technological implementation towards SMEs performance in Halal food industry. The methodology used was quantitative method and the questionnaires were distributed among SMEs food supplier at Perlis. SMEs Halal was selected for the study due to the fact that there are currently many ICT service platforms were used for Halal business. The finding demonstrated that the adaption of technology implementation affects SMEs performance. The findings had highlighted the important factors of technology that need to be given attention by the SMEs in order to be more competitive and gain excellence performance in Halal food industry. The implications of this study would contribute to understanding of the technology adoption towards SMEs performance in Halal industry.

Keywords: *Halal Food Industry, Technology, Firm Performance, SMEs Performance.*

Antioxidant and Antibacterial Screening of Kelulut (*Hiterotrigona itama*) Honey from Differents Meliponiculture Areas in East Kalimantan, Indonesia

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ABSTRACT

Heterotrigona itama is a type of stingless bee honey from different meliponiculture areas in East Kalimantan. The purpose of this study was to analyze the phytochemical, antioxidant activity and antimicrobial activity from different meliponiculture areas in East Kalimantan. Phytochemical testing was carried out qualitatively, antioxidant activity was evaluate using DPPH (1.1-diphenyl-2-picrylhydrazyl-radical) radical scavenging assay. Antimicrobial activity of *S. aureus* and *E. coli* was performed throught in vitro test. The results showed that the stingless *H. itama* honey from 5 cultivated areas in East Kalimantan had flavonoid, coumarin, steroids, carotenoids, and some of which had alkaloid and tannin compounds. The antioxidant activity (IC_{50}) 43,54 ppm-71,27 ppm and antimicrobial activity of *S aureus* and *E. coli* are classified as strong inhibition.

Keywords: *H. itama, stingless bee honey, phytochemical, antioxidant, antimicrobial*

The Characteristics of Cassava var. *Gajah* (*Manihot esculenta C*) Derivative Products as A Thickening Agent in The Manufacturing of Tamarind Paste (*Tamrindicus indica*)

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ABSTRACT

Cassava var. *Gajah* (*Manihot esculenta C*) is a superior crop typical of East Kalimantan and has excellent potential to be developed into a carbohydrate-based agricultural industry commodity. However, utilization of cassava var. *Gajah* has not been carried out optimally, and no research has been found that uses it as a thickening agent in making pasta. This study aimed to determine the characteristics of tamarind paste, which is processed with natural thickening agents from Cassava var. *Gajah*, namely cassava starch and cassava flour, with treatment concentrations of 1, 3, and 5% (w/v). This study used a completely randomized design with three replications. The results showed that adding a 5% thickening agent in cassava starch had the best effects on the Viscosity, water content, and pH of 8,586 Pa.s, 74%, and 2.46%, respectively. Cassava flour 5% gave the highest value in the solubility test, 19.33%, with the solubility speed is slower with the addition of a thickening agent, and starch content is 3.05%. The addition of 3% cassava starch resulted in ash content of 1.66%. This study suggests that the derivative products of cassava are in the form of starch and flour and Cassava var. *Gajah* could be used as an alternative natural thickener in the manufacture of tamarind paste.

Keywords: *Cassava var. Gajah, tamarind, tamarind paste, viscosity.*

Determination of Moisture, Ash, Protein, Polyphenolic, Flavonoids, and Amino Acid Contents and Antioxidant Capacity of Dried Mekai (*Pycnarrhena tumefacta* Miers) Leaf as Potential Herbal Flavor Enhancers

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ABSTRACT

Mekai leaf (*Pycnarrhena tumefacta* Miers) is used by the Dayaks tribe as a glutamic acid substitute to enhance the umami flavor of traditional foods. A dried mekai leaf is applied directly to the pan during cooking. Mekai contains glutamate, but its amino acids and other properties such as antioxidant capacity and phenolic-related substances have not been quantified. The purpose of this study is to determine the moisture, ash, protein, polyphenolic, flavonoids, amino acid content, and the antioxidant capacity of Mekai, leaves dried in the sun, gas, and electric ovens at various temperatures and times. The moisture content of dried Mekai leaves was 6.95-9.30% (w/w). The ash and protein contents of dried Mekai leaves are 4.22-5.47 % and 15.7-20.6 % (w/w), respectively. The optimal moisture and ash content conditions were obtained after 3.5 hours of electric oven drying at 60 °C. Various drying methods have no discernible effect on protein content, except for electric oven drying at 60 °C for 3.5 hours, which results in protein content of 16.90.0 percent (w/w). Sundried Mekai has the lowest TPC value, whereas samples dried in an electric oven have a higher TPC value than samples dried in a gas oven. Both electric and gas oven drying at 60 °C for 2.5 hours resulted in significantly higher levels of flavonoids and antioxidant activity than other drying conditions in the same group. Mekai leaves are identified by the presence of arginine, glutamate, aspartic acids, and leucine. After sun drying, the concentrations of arginine, leucine, and isoleucine increased more than other amino acids

Keywords: *amino acid, flavonoids, flavor enhancers, polyphenolic, Pycnarrhena tumefacta*

Effect of Baking Temperature and Duration Towards Proximate, Crude Fiber Content and Antioxidant of Sweet Potato Snackbar Coated with Soursop Yoghurt

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ABSTRACT

Snack bars are defined as snack products in the form of stems and are a mixture of various ingredients such as cereals, fruits, nuts, which are bound to each other with the help of a binder agent. Utilization of purple sweet potato and soursop fruit to diversify food and improve its quality and nutritional value. This study was conducted to determine the chemical characteristics of the purple sweet potato snack bar coated with soursop yogurt in the form of water content, ash content, fat content, protein content, carbohydrate content, total energy, crude fiber, and antioxidant activity (IC_{50}). This study used two factors and two replications. The first factor is the roasting temperature (120°C, 130°C, 140°C, 150°C, 160°C), and the second factor is the roasting time (50 minutes, 70 minutes, 90 minutes). The results showed that the temperature and baking time had a significant effect on the chemical characteristics of the resulting snack bar. From the results of chemical analysis of purple sweet potato snack bar with the addition of soursop yogurt, the best treatment was at a temperature of 120°C and a roasting time of 50 minutes with a water content of 11.12%, ash content of 1.74%, fat content of 11.39%, protein 3.85%, carbohydrates 72.23 %, calories 340.79 Kcal, crude fiber 3.88%, and antioxidants 129.86 ppm

Keywords: *Purple Sweet Potato, Soursop, Yogurt, Coated Snack Bar*

Potential of Agricultural By-product as Ruminant Feed in North Aceh Districh

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ABSTRACT

North Aceh District is one of the districts that produces ruminants and has great potential in the agricultural sector which will produce by-product so that it can be used as animal feed. The study was conducted from January to December 2018 in North Aceh district, Aceh Province. This study is a descriptive study. From the results of the study, it was found that the potential of agricultural by-product that could be used as feed was 5,145 rice (DDM / ton), peanuts 3,508, green beans 1,249, corn 261,530, cassava 146,332, soybean 145,420 and sweet potato 15,077 (DDM / ton). Almost sub-districts have the potential for by-product from rice plants except for the Nisam subdistrict. Baktiya Subdistrict is the largest producer of by-product from cassava, rice and sweet potato plants with a percentage of 12.43. The second place was followed by Sawang sub-district with potential by product from soybeans, cassava, corn, rice, and peanuts with a percentage of 9.23 and in third place was Tanah Jambo Aye sub-district with potential by-product from peanuts, cassava, soybeans, corn, sweet potatoes and rice. the percentage of 6.59 and finally the Geureudong Pase sub-district with the potential of cassava, peanuts, green beans, rice and corn with a percentage of 0.86. It can be concluded that with the increasing population of ruminants, it will require alternative feed obtained from agricultural byproduct which has potential in all sub-districts of North Aceh District.

Keywords: *Potential, Agricultural by product, Feed, Ruminants*

Constant 12 and Hahslm 472319 As Universe Creation Code on Tortoise Shell in Covid Economic Era

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ABSTRACT

The purpose of this study is to analyze the meaning contained in the morphology of the tortoise carapace and plastron using an Islamic approach in the Covid pandemic situation and the simultaneous economic and social crisis. The objects in this study include tortoises, the sociological impacts of the economy due to Covid and their relationship with the theory of H and the Al-Qur'an. Meanwhile, the methodology that will be used in this research is reflexivity and similarity in which the method is to investigate the linkages of the factors that have been mentioned. If you look at its origins, the tortoise shell which has this unique shape makes it an interesting animal to study in the field of vertebrate biology. In this study, the authors will focus on tortoise carapace and plastron. The results obtained in this study are if the tortoise carapace which has a scute of 3 and 1.9 can reflect the values contained in the meaning of Islam, this is evidenced in the Hahslm number 472319. In addition, the marginal number itself has a total scute 24 and 1 nuchal, so can get 7 digits in the numbers 2 + 4 + 1 = 7.

Keywords: *12, 472319, Constant, Hahlsm, Shell, Tortoise.*

Ameliorating Small Ruminant Complete Ration Based in Tropical Grass on Farm Level With Local Concentrate and Leaf Protein of Trees Legumes

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ABSTRACT

Indonesia is one of the big human population in the world, still import red meat, since the price of this commodity in country is higher than those import. During the dry season farmers face on shortage supply of forage followed decrease beef production. This research aimed to study the effects of fast growing trees legumes leaf on complete dry ration based on tropical grass. The treatments were: T-0 = *Pennisetum purpureum cv. Mott* (control); T-1 = Control + *Gliricidia sepium* (GS) + Local Concetrate (LC); T-2 = Control + *Leucaena leucocephala* (LL) + LC; T-3 = Control + *Indigofera zolingeriana* (IZ) + LC. Treatments were arranged on Completely Randomized Design. Nine months old of twenty male goats has been used. This research showed that on farm level yield of leaf dry matter of *I. zolingeriana* higher than both *G. sepium* and *L.leucocephala.* From animal nutrition point of view *Indigofera zolingeriana* as a source of leaf-protein has the best results on all variables measured. It could be concluded that leaves of *Indigofera zolingeriana* prospective to support the application of technology complete ration based on local resources in the tropical region.

Keywords: *Leaf protein, Legumes, Lation, Small ruminant, Tropical grass.*

Cases of Subclinical Mastitis in Dairy Cattle, Microbiological Quality and Residues of Antibiotic Cow's Milk: A Case Study in Tanggamus District

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ABSTRACT

This research was conducted in January 2020 in Tanggamus District, Lampung Province. The milk samples used in this study were individual samples from all lactating cows, as many as 19 samples from 2 districts, namely Gisting Sub District and Air Naningan Sub District. The tests carried out were the somatic cells count (SCC) using the Breed method and mastitis IPB-1 test, total plate count (TPC), *Staphylococcus aureus*, coliform and *Escherichia coli*, density, pH values and antibiotic residue testing using Screening test/Bioassay. The data obtained were analyzed descriptively. The results of the study on SCC showed that Gisting Sub District had higher SCC than Air Naningan Sub District, which was > 400,000 cells/ml (2,554,285 cells/ml) and was supported by the IPB-1 mastitis test, which was 33.33% the teats that were positive for mastitis subclinical. The test results on TPC and *E. coli* showed that Air Naningan Sub District had higher TPC and *E. coli* values than Gisting Sub District, which were 3.39 log cfu/ml and 0.8 log cfu/ml, respectively. Meanwhile, the test results for the presence of *S. aureus* and coliform bacteria showed that Gisting Sub District had higher levels of *S. aureus* and coliform bacteria than Air Naningan Sub District, which were 0.32 log cfu/ml and 2.36 log cfu/ml, respectively. The results of density and pH values in 2 sub-districts showed almost the same, namely 1.030 and 6.88. The results of the Bioassay screening test for antibiotic residues in cow's milk in Tanggamus District showed that there were no samples containing penicillin, tetracycline, aminoglycoside, and macrolide antibiotic residues.

Keywords: *Antibiotic residues, Milk cow's, Mastitis test, Microbiology.*

The Bioinformatics Analysis in the Whole Genome mtDNA Sequence of Chickens (*Gallus gallus*)

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ABSTRACT

Chicken is important livestock in the world that is kept for egg and meat productions. This study was aimed to perform a bioinformatics analysis in the whole genome mtDNA (16,979 bp) of many chicken breeds. Total 84 whole-genome mtDNA sequences were used in this study and obtained from the reference sequence (GenBank). Four molecular packages of BioEdit, MEGA-X, DNAsp, and Arlequin were used in this study to analyze the observed sequences. Therefore, the whole genome mtDNA sequence of birds in this study was originated from Asia, the USA, and New Guinea. Research showed that a total of 445 mutation sites and 81 haplotypes were obtained in this study. Thus, the nucleotide diversity in the observed sequences included of high (0.99). In addition, a total of 10 clusters were observed according to the phylogenetic analysis with the UPGMA method. In conclusion, a close genetic relationship was observed among chickens of Asia based on the median-joining network. Meanwhile, the geographical factors were contributed about 9.12% in a sequence variation.

Keywords: *Bioinformatics, Chicken, GenBank, Genetic diversity, mtDNA.*

Factor Influencing the Success of Integrated Agricultural System in Farmer's Group in Boyolali Regency, Central Java

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ABSTRACT
The agricultural sector mainly consists of crops and livestock which is an integrated system which has the aim of utilizing each other's waste so as to reduce production costs (LEISA). This study aims to determine the factors that influence the success of an integrated farming system between rice and beef cattle in Boyolali Regency. This research was conducted by purposive sampling of 153 respondents of rice farmers as well as beef cattle breeders in Boyolali Regency. The data collection method used is a survey by filling out questionnaires by respondents. The data analysis used is validity, reliability, multiple linear regression analysis followed by determination test (R2), F test, t test and classical assumption test. The results of the validity and reliability test showed valid and reliable results. Multiple linear regression analysis obtained the equation Y = 4.421 + 0.211 X1 + 0.003 X2 + 0.591 X3. The value of R2 is 0.706. The F test shows the value of F-count 42.414 > 2.779. Based on the t-test, individual factors and environmental factors of farmers have a significant effect on farmers' business performance, while business behaviour factors have no effect. The results showed that individual factors and environmental factors of farmers can affect the performance of farmers' businesses in achieving success in running an integrated farming system business between rice and beef cattle.

Keywords: *Integrated Farming System, Rice Farmer, Beef Cattle.*

The Effect of Post-Thawing Semen Quality on Bali Bulls with Different Freezing Times

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ABSTRACT
This study aims to determine the effect of post-thawing semen quality on bali bulls with different freezing times. The type of research used is quantitative research with experimental methods. The number of treatments was 5 with 4 replications. Treatment T0 was control (without freezing/fresh semen), treatments 1 to 5 were freezing for 1 day, 7 days, 14 days, 21 days, and 30 days, respectively. The data obtained were analyzed by descriptive analysis for macroscopic evaluation and General Linear Model Multivariate test for microscopic evaluation, if the results showed a significant effect, then continued with the LSD (Least Significance Different) test. The results showed that there was a very significant effect ($P<0.01$) on motility, significant ($P<0.05$) on viability, and no significant effect ($P>0.05$) on semen abnormality. There was a very significant difference in motility ($P<0.01$) between T0 and T1 to T5, a significant difference in viability ($P<0.05$) between T0 and T1, T2 and T3, a significant difference in abnormality ($P<0.05$) at T0 and T2. The optimum freezing time was found in the 30 day treatment (T5) with the percentage of motility 48.75%, viability 81.27%, and abnormality 10.91%.

Keywords: *Keywords Bali bulls, Freezing semen, Post-thawing semen quality*

Performance of Eggs and Blood Serum Fragnant Pandan Flour (*Pandanus Amarylifolius* Roxb) in Laying Hens Ration

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ABSTRACT

This study aims to determine the performance of eggs and blood serum fed pandan fragnant flour feed (*PANDANUS AMARYLIFOLIUS ROXB)* in laying hens rations. Total of 100 laying hens were used in the study, with 5 treatments and 4 replications each filled with 5 chickens. Research design used was a completely randomized design, if there were differences the Duncan's Multiple Distance was carried out. Treatments given fragnant pandan flour were 0%, 1%, 2%, 3%, and 4%. This research was conducted for 8 weeks. Parameters included: ration consumption (g/head), ration conversion, egg weight (g), Hen day production (%), blood cholesterol (g/ml), HDL (g/dl) and LDL (g/dl). Results showed that the use of fragrant pandan leaf flour up to 4% gave a very significant effect ($P < 0.01$) on conversion, hen day egg weight production, blood cholesterol, blood HDL and blood LDL, but not significantly different ($P > 0.05$) on ration consumption. Conclusion: Use of fragrant pandan leaf flour up to 4% in the ration can improve performance and blood serum.

Keywords: *Fragnant pandan flour, Egg performance, Blood serum.*

Mating Behavior of Ciayumajakuning Muscovy duck in the Caged Maintenance System

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ABSTRACT
Muscovy duck development can be influenced by reproductive performance, including mating behavior. The purpose of the study was to obtain the quantitative characteristics of the ciayumajakuning Muscovy duck mating and to obtain the best Muscovy duck in its mating characteristics. The research method was carried out experimentally using a completely randomized design with 4 treatments and 5 replications. This research used Muscovy duck from Cirebon, Indramayu, Majalengka, and Kuningan areas as many as 20 drake and 120hen allocated to 20 cages, each cage consisted of 1 drake and 6hen. The cage is 1m wide and 4m long, equipped with a place to feed and drink, as well as a ClosedCircuit Television (CCTV) device that is connected to a camera. Parameters observed were mating behavior, mating frequency, mating duration, mating time, and mating location. The results showed that the mating behavior of Muscovy duck consists of 3 stages, namely the pursuit of the hen by the drake, seduction, the drake ascending to the hen, and mating. The frequency of mating for males is 6.14+0.69 and females 1.02+0.33 times per day. Mating duration 117.64+14.41 seconds. Mating time in the afternoon before the afternoon at 15.30-16.30 wib. Location of mating around the drinking place. The conclusion is that the mating characteristics of the Muscovy duck Kuningan are the best compared to that of the Muscovy duck Indramayu, Cirebon, and Majalengka.

Keywords: *Mating behavior, Ciayumajakuning Muscovy duck.*

Effort to Reduce Fat and Cholesterol of Quail Eggs Using Citronella Oil in Feed

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ABSTRACT
The purpose of this study was to determine the effect of citronella oil supplementation in feed on fat and cholesterol levels of quail eggs (Coturnix coturnix japonica). The materials used were 100 female quail Coturnix-coturnix japonica, quail commercial feed, commercial citronella oil. The design used was Completely Randomized Design (CRD) with 4 treatments and 5 replications. The treatments included citronella oil supplementation 0.3%, 0.6%, 0.9% per kg feed. The experimental research was carried out for 8 weeks. The data obtained were analyzed for variance (ANOVA) and Duncan's Multiple Range Test (DMRT). Analysis of variance showed that the treatment of citronella oil supplementation in the feed had no effect ($P>0.05$) on egg protein but significantly ($P<0.05$) on cholesterol and had a very significant effect ($P<0.01$) on egg fat content. From this research it can be concluded that giving citronella oil as much as 0.6% per kg of feed can reduce fat and cholesterol in quail eggs

Keywords: *Egg quality, Female quail, Egg fat, Egg cholesterol*

Effect on Making Anaerobic Fermentation of Silage Mixed Sludge Ice Cream and Dried Cassaya the Quality Silage

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ABSTRACT

Sludge Ice cream is a waste generated from the ice cream processing process. So far, there has been no article on the use of sludge ice cream as feed in Indonesia. Waste from processing ice cream can cause environmental pollution if left alone because of the pungent smell. Therefore, there is a need for new innovations so that sludge ice cream can be utilized as a feed ingredient. This study aimed to determine the effect on anaerobic fermentation process on making silage of sludge ice cream and dried cassava (silage CLEO) on the rate of lactic acid production, the rate of change of pH levels, and the number of *Enterobacteriaceae*. Silage CLEO has an ratio sludge ice cream and dried cassava as much as 50:50. The treatments used in this study as many as 9 different times during the 30 days on days 1, 4, 7, 10, 13, 16, 19, 22, and day 30 with 3 repetitions. *Enterobacteriaceae* were measured on days 1 and 22 with 3 repetitions. To estimate the rate of lactic acid production, and the rate of change of pH used regression analysis. The best regression model is determined by the highest determination coefficient with the lowest error standard analysis. Used to calculate CurveExpert 1.3 software. Research shows that the length of fermentation affect the rate of production of lactic acid, the pH value changes, and decrease the amount *Enterobacteriaceae* of silage CLEO.

Keywords: *Fermentation, Ice cream, Dried cassava, Lactic acid, pH, Enterobacteriaceae*

Nutrients and Tanin Content in the Leaves of Trembesi (Samanea Saman) For Potential As Ruminant Feed

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ABSTRACT
The purpose of this study was to examine the nutrient content and secondary metabolites of tanin in Trembesi (*Samanea saman*) leaves that their potential as ruminant animal feed could be identified. This research is a descriptive study, the data obtained will be presented in a table. The data obtained indicate that the leaves of the trembesi plant contain sufficient nutrients to be used as animal feed, and secondary metabolites of tanin are also present in them. This research can be concluded that trembesi (*Sammanea saman*) has the potential to become ruminant animal feed.

Keywords: *Trembesi, Nutrient, Tanin*

Cavy Husbandry: Unleashing the Potential of the Often-Overlooked Mini-Livestock

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ABSTRACT
Cavy (Cavia porcellus) is a small animal with a huge potential, yet often neglected most of the time. It is mainly known as a pet or a laboratory animal, and their husbandry practice is mostly subsistence, without commercial or industrial application. This paper aims to review the cavy husbandry and the possibility of its development to answer various problems in human civilization. Compared to other livestock, cavy has various advantages. Cavy has a lower environmental footprint compared to other type of animals. It also has more potential adaptability to climate change. Moreover, without known cultural and religious barrier of their consumption, their potential as a healthy meat source is straightforward. Some cultures even have it, that cavy's meat has traditional healing properties. The traditional healings may incorporate the consumption of cavy's meat as part of their rituals. Their fast growing, easy breeding, and short reproduction cycle enable more opportunity for meat production. Regarding gender and equality issues in agriculture, cavy husbandry is superior that it could be performed by men, women, children, as well as disabled person. Thanks to cavy's physical and behavioral characteristics, cavy husbandry may have the answer to the land use and water scarcity issue. In terms of energy, cavy husbandry also has the lowest energy requirement to other livestock. From the perspective of one health, cavy doesn't have any contagious diseases related to human, and thus cavy husbandry is suitable for urban farming.

Keywords: *Guinea pig, Sustainable agriculture, Livestock, Urban farming*

Semen Quality of the Etawah Crossbreed Bucks Fed Urea Moringa Molasses Multinutrient Block Supplement with Native Grass Basal Feed

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ABSTRACT

Moringa leaves contain high and complete nutrients, so they can be used as a making block for multinutrient blocks to improve semen quality. This study aimed to evaluate the effect of using Moringa leaf flour in a multinutrient block on the semen quality of Etawah crossbreed (PE) buck fed the native grass as basal feed. This study used eight PE bucks aged 36.72±1.06 months with a bodyweight of 54±2.97 kg, which was kept intensively in individual cages for eight weeks. PE bucks were four tail to fed *Urea Molasses Multinutrient Block* (UMMB) supplement as a control, and four tail PE bucks were fed *Urea Moringa Molasses Multinutrient Block* (UMMMB) as a treatment. The bucks were fed the native grass *ad libitum* basis as the basal feed. Bodyweight and scrotal circumference measurements were carried out in the first, fourth, and eighth weeks to determine the performance of the experimental goats used. Semen collection for assessing the quality of fresh semen is carried out every week from week 4 to week 8. The variables measured were compared using the independent sample t-test. UMMMB supplementation was not significant ($P>0.05$) decreased ration consumption and increased body weight gain and scrotal circumference (3.10±0.02 vs 2.99±0.09 kgDM; 0.12±0.01 vs 0.14±0.04 kg/day; and 0.04±0.02 vs 0.05±0.01 cm). UMMMB supplementation did not significantly ($P>0.05$) improve the quality of fresh semen such as volume, concentration, viability, abnormalities, and intact plasma membrane (1.1±0.06 vs 1.1±0.05 ml; 389±25.43 vs 419±11.49×10^7; 86.74±1.16 vs. 88.66±1.30%; 5.41±0.43 vs. 5.61±0.64%; and 87.00±1.11 vs. 88.94±0.63). However, UMMMB supplementation significantly ($P<0.05$) increased the total motility of sperm the PE bucks (76.72±1.16 vs 80.26±0.61%). It can be concluded that UMMMB supplementation can improve the sperm quality of PE bucks.

Keywords: *Semen_quality, Etawah_Cross-Breed, Moringa, Multinutrient_block*

The Effect of Addition Lempahong (*Baccaurea lanceolata)* Fruit Extract on pH, Organoleptic, and Antioxidants of the Making Yoghurt

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ABSTRACT
Yogurt is a dairy product made through a bacterial fermentation process. The addition of Lempahong fruit (*Baccaurea lanceolata*) which contains antioxidant compounds is expected to add to the unique taste of *Baccaurea lanceolata* fruit and as a source of antioxidants as a functional processed animal product. This research was conducted to determine the physical properties with a pH value, to determine the quality of yogurt by organoleptic test and to determine the presence of antioxidant activity in yogurt. This study used a completely randomized design with 6 treatments and 4 replications, namely yogurt without the addition of lempahong fruit extract, yogurt with the addition of 2% ,4% , 6%, 8%, and 10% lempahong fruit extract. The results obtained were a pH value of 4.2 - 4.3 from each treatment, the average organoleptic test got a score of 3 (rather like) and the antioxidant activity test found the strong to very strong category. The conclucion of the result an administration of *Baccaurea lanceolata* fruit extract in yogurt did not significantly affect the pH value, and had a significant effect on the organoleptic test and antioxidant activity, the best treatment was obtained from yogurt with the addition of 2% extract.

Keywords: *Yogurt, Baccaurea lanceolata fruit, pH, Organoleptics, Antioxidants*

The Relationship of Body Size and Body Weight with Regression Model in Ewe Etawa Crossbreed Goats in East Kalimantan

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ABSTRACT
The Etawa crossbreed goat (PE) is one of the local tropical livestock that has been widely distributed in East Kalimantan. The advantages of the PE goat as livestock are widely developed to produce meat, milk, and skin. This study aims to determine the relationship between body sizes and body weight in ewe PE goats as a productivity evaluation parameter using a simple regression equation model. The research was conducted in August 2019 – December 2020 in 2 (two) cities in East Kalimantan, namely Samarinda and Kutai Kartanegara. The study included measurements of each individual, namely body weight, shoulder height, body length, and chest circumference with goats aged 0.5-1 years using a measuring tape, measuring stick, and scales. Data were analyzed by correlation analysis and simple regression methods. This study shows that the relationship between the body size of ewe PE Goats in Kutai Kartanegara which has a high closeness to bodyweight is shoulder height with R 0.738 and R2 0.545, with Body size regression equation model while Y= -19,033 + 0,733 TP, and the results of sampling in Samarinda which have high body size closeness with bodyweight is shoulder height with R 0.833 and R2 0.694, while the regression equation model Y= -15.685 + 0.668 TP. The results of this study indicate that there is a strong relationship between body sizes and body weight in PE goats so that body size can be a selection parameter used in livestock to identify livestock productivity.

Keywords: *Selection, PE goats, Regression, Productivity.*

The Impact of Pre-Slaughter and Slaughter Procedure on Animal Welfare and Behavior Changes in Cattle at Local Abattoir in Samarinda-Indonesia

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ABSTRACT

This research aims to address the impact of pre-slaughter handling and slaughtering process on animal welfare and changes of cattle behavior at local abattoir in Samarinda-Indonesia. 142 Bali cattle were used, slaughtered and observed to explore the effect of pre-slaughter and slaughter procedure on stress levels and the cattle behavioral changes. The data were collected using the inspection form and statistically analyzed descriptive to describe the percentage of animal behavior changes during antemortem and post slaughter. The results showed that, at the pre-slaughter stepwise, the animals were falling down 6.3% of 142 heads of cattle. On the flip side, after the post-cut the animals had experienced and demonstrated a return of consciousness with a reflex percentage of straightening their heads and bodies of 57.0%, 82.4% of tail movements and followed with 69.0% vocalizing amongst cattle; it has attributed to improper handling before slaughtering process. Furthermore, lack of knowledge of stockperson on animal attitude & behavior also has contributed significantly stress and animal behavior changes on animals during interactions between stockperson and livestock. This research shows that the lack of application of animal welfare could be seen and measured from the behavior of livestock (cattle) point of view at the Tanah Merah Slaughterhouse in Samarinda-Indonesia.

Keywords: *Abattoir, Pre-slaughter slaughter process, Animal behavior,*

Performance of Cattle with Grazing System at Oil Palm Plantation Ecosystem in Serdang Bedagai Regency, North Sumatra Province

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ABSTRACT
The study was conducted to determine the performance of cattle with grazing systems in the oil palm plantation ecosystem. The research was carried out in Paya Pinang Village, Tebing Syahbandar District, Serdang Bedagai Regency, North Sumatra from June-December 2018. Information data obtained by observation and questionnaire interviews with farmer groups. The questionnaire includes livestock productivity (Calving Interval, Calving Rate, Calf Crop, Service/Conception, score condition body and pre-weaning child mortality) as well as a business feasibility study. The results showed that livestock productivity (Calving Interval: 15-18 months), Calving Rate 50%, Calf Crop 50%, S/C: 2-3, mortality of pre-weaning children <1%. The results of the feasibility study showed an average profit of Rp. 15,200,000/year with B/C ratio of 1.09. The introduction was carried out by planting tree legumes and feeding flussing for productive female cows. The results of flussing feeding to productive female cows increased the condition score from 2-2.5 to 2-3. Based on the research results, it is concluded that cattle herding in oil palm plantations does not have a negative effect on the growth of cattle but can provide forage for cattle. Farmers must continue to provide additional feed according to the physiological development of the livestock for optimal development.

Keywords: *Cow calf operation, Oil palm plantations, Productivity*

Plants Diversity in Degraded Peat Swamp Forest in Tengku Dacing, Kayan-Sembakung Delta, Indonesia

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ABSTRACT
Human disturbance has degraded the Tengku Dacing peat swamp forest, resulting in a decrease in plant diversity. There has been no report on plant diversity from this region; however, degradation is ongoing. As a result, the current study sought to assess the plant diversity of the Tengku Dacing peat swamp forest in North Kalimantan, Indonesia. Purposive sampling is used, with a transect line length of 125 meters and as many as six circular plots with a radius of 7 meters on each transect path. On the basis of the minimum area curve, the square area of seedlings and saplings was calculated. The results showed 11 seedling species with a diversity index of 1.84 classified as low to moderate. A total of seven species of saplings and 24 species of trees were discovered at the locations, with diversity index (H') values ranging from 1.6 to 2.15, indicating that sapling diversity was low and tree diversity was moderate. The diversity index of herbs and shrubs was found to be low, while the diversity index of tree groups was found to be medium. This area had been degraded due to land conversion, according to the diversity index and direct observation of the Tengku Dacing peat swamp forest.

Keywords: *Plant diversity, Peat-swamp ecosystem, Kayan-Sembakung Delta, degraded forest*

The Correlation and Relationship Between Diameter Increment and Climatic Elements in A Secondary Forest of Universiti Malaysia Sarawak, Malaysia

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ABSTRACT
Climatic elements play important roles in the growth of plants. The aims of this study were to determine correlation and relationship between plant growth and climatic elements (rainfall, rainy days, temperature, relative humidity, and solar radiation) in a secondary forest of Universiti Malaysia Sarawak (Unimas), Sarawak, Malaysia. The plant growth was indicated by diameter at breast height (DBH) of some selected tree species. The DBH increment of 30 selected trees which consisted of nine species (*Acacia mangium, Cratoxylum arborescens, Cratoxylum glaucum, Endospermum diadenum, Euodia glabra, Macaranga gigantea, Macaranga triloba, Vernonia arborea, and Vitex pubescens*) was recorded monthly through the use of Series 5 Manual Band Dendrometer for a period of 1 year. The result showed that DBH increments of several selected species were positively and negatively correlated to one or more climatic elements. The relationship between DBH increment of *E. diadenum* and climate elements were significant.

Keywords: *Climatic elements, Diameter increment, Fast growing species, Secondary forest*

Factors Affecting the Occurrence of Logging Waste in Natural Forests in East Kalimantan

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ABSTRACT
The occurrence of wood waste biomass in the process of toppling trees in natural forests is unavoidable. However, possible efforts to reduce the factors that influence the occurrence of logging waste must be pursued. This study aims to determine the factors that influence logging waste. Measurement of stump and trunk waste was carried out on 85 sample trees located in three felling plots. This research involved six chainsaw men of various ages and work experiences. All chainsaw men used the same brand and type of chainsaw, but with different ages, namely 4, 5, and 10 years. The slope of the felling location is in two slope classes, namely flat and medium slopes. The results showed that the age of the chainsaw man and the chainsaw used, and the diameter of stumps and stems affected the resulting waste. At the same time, the working experience of the slope and chainsaw does not affect the occurrence of logging waste. Therefore, it becomes important to improve the supervision of chainsaw men in work and to rejuvenate chainsaws in an effort to minimize logging waste.

Keywords*: Chainsaw, Chainsaw man, East Kalimantan, Logging waste, Natural forest*

Implementation of Land Rehabilitation to Reduce Soil Erosion and Surface Runoff by Sengon (*Falcataria Moluccana*) and Jabon (*Antocephalus Cadamba*) Plantation

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ABSTRACT

Land productivity and stability can be reduced due to damaged watershed systems and increased surface runoff and erosion in soil. Unsustainable land management is one of the factors affecting land degradation, most of the decreased quality of the land is caused by soil erosion. Implementations of land rehabilitation and soil conservation especially to prevent the soil from erosion rates in some degraded land. The aim of this study was to determine the amount of surface runoff and erosion which potentially occurred on the vegetatively rehabilitated land by sengon and jabon plantation. The study was established on open land in the Education Forest of Forestry Faculty, Mulawarman University, Samarinda, East Kalimantan. The erosion measuring plots (EMP) were prepared at open land with the presence of sengon and jabon at different slope classes. Two plots with the size of 10 m x 4 m were made for each combination used. At the lowest part of the EMP, a paralon pipe was then installed to channel surface runoff and eroded soil into the storage drum. Hydro-orological parameters, including rainfall, surface runoff (only water mass measured), potential erosion rate (A), erosion hazard class (EHC), erosion hazard level (EHL), and depth of soil solum, were observed. The amount of surface runoff at the land planted with sengon and jabon showed different values regarding the slope classes and plant age. At the slope classes of rather steep, the surface runoff was lower than that of steep even at both 1 year and 2 years of planting age. The potential erosion that occurred in the area planted with sengon in the slope class of rather steep and steep at plant age was still lower than 15 ton ha-1year-1, indicating that the erosion hazard level was low. A similar condition was found at land planted with jabon at rather steep. On the other hand, land planted with jabon in steep slope classes both 1 year and 2 years showed potential erosion > 15 ton ha-1year-1 (EHL was low). This study suggested that sengon and jabon could be potentially utilized to reduce runoff rates and eroded soil mass for water and soil conservation in the future.

Keywords: *Land rehabilitation, Soil erosion, Surface runoff, Erosion hazard class, Erosion hazard level*

Coal Mining in Good Environmental Governance Perspective

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ABSTRACT

Coal mining activities in East Kalimantan (Kaltim) have been going on for decades, but have not had a significant impact on economic development for the people of Kaltim. This is a paradox, that Kaltim as the largest coal contributor nationally continues to experience social, economic, and ecological crises. This study aims to explore coal mining management from the perspective of Good Environmental Governance (GEG) using a qualitative descriptive approach with interactive model data analysis. The data in this study, namely primary data, obtained through in-depth and semi-structured interviews from key informants; and secondary data, in the form of publications and documentation to strengthen the conceptual framework, theoretical analysis, and literature review to support this study. Our analysis shows that coal mining has had a very large impact on ecological damage in Kaltim. Coal mining management based on GEG principles is still a jargon, because in practice, GEG principles are still in a vacuum and have not been transformed into a concrete policy in the administration of government in the natural resources sector. So that a natural resource and environmental management policy based on the vision of protection and preservation of environmental functions is needed in supporting sustainable development.

Keywords : *Coal Mining, Ecological Crisis,Environmentalism,GEG, Sustainable Development*

Strategic Planning for Sustainable Tourism Management in Pangempang Beach

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ABSTRACT

Strategic Planning for Sustainable Tourism Management in Pangempang Beach. Pangempang Beach tourism area is an object and tourist attraction (ODTW) which is included in the category of developing areas and most of them have not been developed and managed professionally. The purpose of this study was to analyze land suitability, carrying capacity and effective sustainable tourism management strategies in the Pangempang Beach tourism area. The research method used is the survey method and interviews with respondents in the form of managers, tourists and the government related to a total of 100 respondents using the Slovin method while the sampling method was accidental sampling. Data analysis using land suitability methods, carrying capacity analysis and advanced tourism management criteria. The results showed that the land suitability analysis of stations I to VIII was in the very suitable category and stations IX and X were in the S2 category or quite suitable for tourism activities. The results of the analysis of the carrying capacity of the tourism area are still far below the area's carrying capacity limit for tourist visits, while overall of the 14 standard criteria for effective tourism destination management in the implementation level of sustainable tourism destination management in the coastal tourism area of Pangempang Beach.

Keywords: *Ecotourism, Pangempang Beach, sustainable tourism management*

The Potential of Residual Processing of Indonesian Marine and Coastal Areas as Biogas Energy

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ABSTRACT
Indonesia's marine and fisheries products are enormous. This potential certainly results in the production of catch and cultivation which is so large and indirectly affects the processing activities. The amount of processing activity and seen from the existing potential of 6,181,997.48 tons per year is estimated to produce the remaining processing results of 1,693,697.94 kg per day. The remaining results of this processing can of course be used as a source of biogas energy to produce electrical energy. From the potential remaining processing, it is estimated that it can produce as much as 8,468,489,700 m3 of biogas per day with the potential for electrical energy that can be utilized as much as 51.66 MWh per day or 1549.73 MWh per month. This potential, of course, will greatly assist the Government as a form of renewable energy use and environmental preservation, particularly the marine and fisheries environment.

Keywords: *Biogas, Renewable energy, Fish industry waste, Fishery*

Application of The FTIR Method Combined with Chemometrics to Differentiate Raw Materials in Leather Gloves

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ABSTRACT
Leather is the best material for making gloves, such as sport and fashion gloves. Gloves are usually made from goat, sheep or pig skin. In Indonesia and some Muslim countries, the products derived from pork are prohibited (haram). Most of costumers cannot differentiate the raw materials in leather products if there are no labels on these products. Various methods such as PCR, HPLC, GC-MS, and FTIR have been carried out to differentiate the row materials of leather products. The FTIR method is known as an inexpensive and easy to be used. The objective of this study was to evaluate the FTIR method combined with chemometrics to differentiate raw materials in leather gloves. Lipid extracts derived from the various skin and leather were scanned using an FTIR spectrophotometer at 4000–450 $cm^{-}1$. There is the differentiation of spectral in several wavenumbers (3000-2800 cm^{-1} and 1200-1000 cm^{-1}). The FTIR spectroscopy combined with chemoometrics can differentiate pigskin, sheepskin, and goatskin through specific peaks in infrared spectra. This can be used as an initial analysis on determining the existence of skin adulteration in leather glove.

Keywords: *FTIR, Chemometrics, Leather Gloves, Raw Material Differentiation*