FANRes 2022 7TH

International Conference on Food, Agriculture, and Natural Resource

# ABSTRACK BOOK

## The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes) 2022

**Blended Conference, Faculty of Food Technology and Agroindustry, University of Mataram**

**Lombok, Indonesia, November 24th-25th 2022**


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**ABSTRACK BOOK**

The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes) 2022

Blended Conference, Faculty of Food Technology and Agroindustry, University of Mataram

Merumatta Senggigi Lombok

Lombok, West Nusa Tenggara, Indonesia

24th-25th November 2022

Organized by:

Faculty of Food Technology and Agroindustry, University of Mataram

**WELCOMING SPEECH OF THE DEAN**

**FACULTY OF FOOD TECHNOLOGY AND AGROINDUSTRY**

**(7TH IC FANRES 2022)**

Assalamu'alaikum warahmatullah wabarakatuh, Good morning, ladies and gentlemen. All Praises to God almighty for giving us the health and opportunity so that we all can meet here today on this special occasion. It is my pleasure to welcome all the participants today for this conference on "The 7th International Conference Food Agriculture and Natural Resources".

The theme of this conference is "Optimizing Innovation on Local Agriculture and Natural Resources to Achieve Food Security and Halal Food Tourism." The objectives of this conference are (1) to Provide a forum for presentations and discussions for researchers or related stakeholders regarding the latest developments in the food sector and natural resource management in realizing food security, (2) to Provide a publication platform for researchers to publish the results of their latest research, and also, as a forum for tourism promotion and regional introduction to the national and international community.

This conference will be held for two days from 23-24 November 2022. We do hope through this conference, new collaborations will be established globally to increase the quality and quantity of our research and scientific publication. It has significant impact to support international academic atmosphere, in line with our institution vision.
I welcome all the eminent keynote speakers, invited speakers as well as the presenters and participants from all over the country from different walks of life.
Deep appreciation to the rector of University of Mataram for being the great support of this conference. We are also grateful for the hard work of the committee behind the scenes and everyone else who contributed to make this conference happen.

Have an enjoyable conference.
Wassalamu;alaikum warohmatullahi wabarakatuh

Dean

Baiq Rien Handayani, SP. MSi. PhD
Dean of Faculty of Food Technology and Agroindustry
University of Mataram

## WELCOME MESSAGE FROM CHIEF EXECUTIVE OF THE 7TH INTERNATIONAL CONFERENCE ON FOOD, AGRICULTURE, AND NATURAL RESOURCES (IC-FANRes) 2022

The 7th FANRes 2022 conference is a forum for gathering ideas from thinkers that can be in the form of pure and applied thoughts. Several researchers who will disseminate their research results come from various well-known national and international universities.

In an increasingly advanced era, science and technology have a significant role and are able to facilitate the activities of various sectors, especially agriculture and tourism. One program that can play an important role for the community and industry is realizing food security and halal food tourism.

This is very important because they must always be aware of food crises and provide safe, quality and halal food for local and foreign tourists who are supported by efforts to advance food defense and the economy.

For this reason, I hope that researchers can continue to provide support through research results and implementation through community empowerment.

The committee would also like to thank all those who have supported and actively participated in the success of this international conference.

This is a great opportunity to share experiences and knowledge, and to help strengthen collaboration between campuses. Once again on behalf of the organizers of this conference, I welcome you. Nice to meet you all here.

Sincerely,

**Rahmat Sabani, S.TP., MP.**

Chief Executive of The 7th FANRes 2022

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## CONFERENCE INFORMATION

| | | |
|---|---|---|
| **Date** | : | November, 24th (Thursday) – 25th (Friday) 2022 |
| **Organizer** | : | Faculty of Food Technology and Agroindustry, University of Mataram |
| **Venue** | : | Merumatta Senggigi Lombok,<br>Jl. Senggigi Beach, Senggigi, Batu Layar District,<br>West Lombok Regency, West Nusa Tenggara, 83355,<br>Indonesia<br>Phone : +62 370 693211<br>Email : hello.merumatta@merumattasenggigi.com<br>Web : www. meruhotels.com |
| **Office Language** | : | English |
| **Secretariat** | : | Faculty of Food Technology and Agroindustry,<br>University of Mataram<br>Jalan Majapahit 62 Mataram, 83125<br>Phone : + 62 370 649 879<br>Email : fatepa@unram.ac.id<br>Web : www.fatepa.unram.ac.id |
| **Conference Website** | : | www.fanres.fatepa.unram.ac.id |

## COMMITTEES

**Person Responsible**

- Baiq Rien Handayani, SP., M.Si., Ph.D

**Event Directors**

- Ir. Zainuri, PGDip., M.App.Sc.,Ph.D
- Dr. Eng. Sukmawaty, S.T.P., M.Si
- Ir. Ahmad Alamsyah, MP
- Dr. Ir. Satrijo Saloko, MP
- Murad, S.P., MP

**Scientific Committee**

- Prof. Ir. Eko Basuki., M.App.Sc.,Ph.D
- Prof. Ir. Widyastuti, M.App.Sc.,Ph.D

**Chief Executive**

- Rahmat Sabani, S.TP., MP

**Secretary**

- Qabul Dinanta Utama, S.TP., M.Si

**Treasurer**

- Mutia Devi Ariyana, S.Si., MP
- Made Gendis Putri Pertiwi, S.Si., M.Sc.
- Ana Aini Mariana, SE

**Event/IT Division**

- Dewa Nyoman Adi Paramartha, S.T.P., M.Si
- Gagassage Nanaluih De Side, S.T., M.T
- Fuad Sauqi Isnain, S.TP., M.T.P., M.Sc.
- Moegiratul Amaro, S.T.P., M.P., M.Sc
- Mi'raj Fuadi, S.T.P., M.Sc.
- Al Gazali Isra Atmanegara, ST
- Raning Dini Hariyanti
- Zulfiana Jayanti

**Presentation and Publication Papers**

- Dr. Ansar, S.Pd., M.P., M.Pd.
- Dr. Joko Sumarsono, S.T.P., MP
- Dr. Kurniawan Yuniarto, S.T.P., MP
- Ir. I Wayan Sweca Yasa, M.Si
- Ida Ayu Widhiantari, STP., MP

- Ines Marisya Dwi Anggraini, S.Si., M.Biotech
- Lalu Unsunnidhal, S.Pt., M.Biotech.

**Secretarial Registration & Lo Divisions**

- Sisca Cicilia, S.T.P., M.Sc
- Muh. Ridwan Amin, S.Kom
- Tri Isti Rahayu, S.T.P., M.Sc
- Firman Fajar
- Irmayani Marzuka
- Basri

**Sponsorship**

- Ir. Nazaruddin, MP.
- Rosyid Ridho, S.T.P., M.Si.,MM
- Oki Saputra, S.S.T., M.Eng.
- Fakhrul Irfan Khalil, S.T.P., M.Si
- M. Faisal Jailani Syafi'i

**Equipment Division**

- I Ketut  Suadnyana
- Amuddin, S.T.P., M.Si
- Muhdin, SP
- Syamsuddin
- I Gede Aditya Prajatama
- Lalu Heri Ulfi

**Consumption Divisions**

- Rini Nofrida, S.T.P., M.Si
- Isnaini Puspitasari, S.T.P., MT
- Lingga Gita Dwikasari, S.Si.,M.Sc
- Novia Rahayu, S.TP., M.Sc
- Nur Hikmawati
- Dindari Bela Qur'ani

## SCOPE OF THE CONFERENCE

Topic of interest includes, but are not restricted to:

- Agricultural
- Natural Resources
- Food Safety
- Food Security
- Food Technology
- Smart Agricultural System
- Biosystem Machinery Engineering
- Food Nutrition & Health

## VENUE MAP

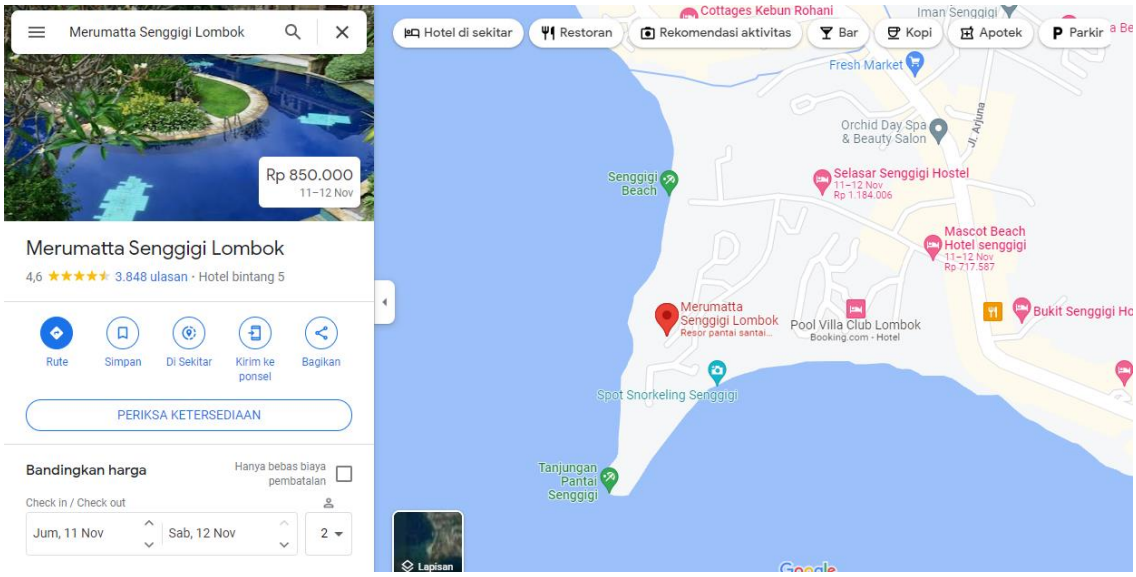
Merumatta Senggigi Lombok,

Jl. Senggigi Beach, Senggigi, Batu Layar District, West Lombok Regency, West Nusa Tenggara, 83355, Indonesia

Phone : +62 370 693211

Email : hello.merumatta@merumattasenggigi.com

Web : www. meruhotels.com




**SCAN HERE**

**Google Maps Link**
https://bit.ly/7FANRESVenueMap

**GENERAL RUNDOWN**
**The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes)**
**November 24-25, 2022. Hotel Merumatta Senggigi Lombok**

| **Thursday, November 24th, 2022** | | | | |
|---|---|---|---|---|
| **Time** | | **Duration (minutes)** | **Activity** | **Location** |
| **Start** | **Over** | | | |
| 08.00 | 08.30 | 30 | Registration | Ballroom |
| 08.30 | 08.35 | 5 | Opening by MC | Ballroom |
| 08.35 | 08.40 | 5 | Singing national anthem "Indonesia Raya" | Ballroom |
| 08.40 | 08.55 | 15 | Traditional Performance | Ballroom |
| 08.55 | 09.00 | 5 | Welcome speech from chairman of committee IC-FANRes 2022 | Ballroom |
| 09.00 | 09.05 | 5 | Welcome speech from Dean of Faculty of Food Technology and Agroindustry | Ballroom |
| 09.05 | 09.15 | 10 | Welcome Speech from President of FANRes<br>Prof. Yuli Witono | Ballroom |
| 09.15 | 09.25 | 10 | Welcome Speech from Governor of West Nusa Tenggara<br>Dr. H. Zulkieflimansyah, S.E., M.Sc | Ballroom |
| 09.25 | 09.35 | 10 | Welcome Speech from Chancellor, University of Mataram<br>Prof. Ir. Bambang Hari Kusumo, M.Agr.St., Ph.D | Ballroom |
| 09.35 | 09.40 | 5 | Doa | Ballroom |
| 09.40 | 09.45 | 5 | Group Photo | Ballroom |
| 09.45 | 10.00 | 15 | Coffee break | Ballroom |
| 10.00 | 10.30 | 30 | Keynote 1: Prof. Shinjiro Ogita (Prefectural University of Hiroshima, Japan) | Ballroom |
| 10.30 | 11.00 | 30 | Keynote 2: | |

| Thursday, November 24th, 2022 | | | | |
|---|---|---|---|---|
| Time | | Duration (minutes) | Activity | Location |
| Start | Over | | | |
| | | | Prof. Patricia Rayes-Duarte (Oklahoma State University, USA) | |
| 11.00 | 11.30 | 30 | Keynote 3: Prof. Julian Heyes (Massey University, New Zealand) | Ballroom |
| 11.30 | 12.00 | 30 | Keynote 4: Dr. Ir. Bambang Supriyanto, M.Sc. | Ballroom |
| 12.00 | 12.30 | 30 | Discussion | |
| 12.30 | 13.30 | 60 | Break | |
| 13.30 | 14.00 | 30 | Keynote 5:<br>Dr. Zulhamsyah Imran (IPB University/SEAMEO BIOTROP, Indonesia) | Ballroom |
| 14.00 | 14.30 | 30 | Keynote 6:<br>Prof. Byuong-Kwan Cho (Chungnam National University, South Korea) | Ballroom |
| 14.30 | 14.45 | 15 | Coffee break | Ballroom |
| 14.45 | 15.15 | 30 | Keynote 7 : Yu-Kuo Chen, Ph.D. (National Pingtung University of Science and Technology, Taiwan) | Ballroom |
| 15.15 | 15.45 | 30 | Discussion | Ballroom |
| 15.45 | 16.00 | 15 | Closing by MC | Ballroom |

| Friday, November 25th, 2022 | | | | |
|---|---|---|---|---|
| Time | | Duration (minutes) | Activity | Location |
| Start | Over | | | |
| 08.00 | 08.30 | 30 | Registration | In Front of Parallel Room |
| 08.30 | 08.50 | 20 | Invited Speaker 1 | Parallel Room |
| 08.50 | 09.10 | 20 | Invited Speaker 2 | Parallel Room |
| 09.10 | 10.00 | 50 | Parallel Session | Parallel Room |
| 10.00 | 10.15 | 15 | Coffee Break | In Front of Parallel Room |
| 10.15 | 11.30 | 75 | Parallel Session | Parallel Room |
| 11.30 | 14.00 | 60 | Lunch | Restaurant |
| 14.00 | 14.45 | 45 | Parallel Session | Parallel Room |
| 14.45 | 15.00 | 15 | Coffee Break | In Front of Parallel Room |
| 15.00 | 15.45 | 45 | Parallel Session | Parallel Room |
| 15.45 | 16.00 | 15 | Closing Ceremony | Ballroom |

**Note :**

- Time in Lombok local time (+8 GMT)
- **Fanres meeting will be held on November 25, 2022**
    - **Time : 09.00-10.30 am Lombok local time**
      **Room : Berugak Room, Hotel Merumatta Senggigi Lombok**

**LIST OF OPENING SPEECH**
**The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes)**
**November 24-25, 2022. Hotel Merumatta Senggigi Lombok**

| No. | Name | Position |
|---|---|---|
| 1. | Prof. Yuli Witono | President of FANRes International Network<br>Director of Research and Community Service Jember University, Indonesia |
| 2. | Prof. Ir. Bambang Hari Kusumo, M.Agr.St., Ph.D. | Rector of Mataram University, Indonesia |
| 3. | Dr. H. Zulkieflimansyah, S.E., M.Sc. | Governor of West Nusa Tenggara, Indonesia |

**LIST OF KEYNOTE SPEAKERS**
**The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes)**
**November 24-25, 2022. Hotel Merumatta Senggigi Lombok**

| No. | Name | University |
|---|---|---|
| 1. | Prof. Patricia Rayes-Duarte | Oklahoma State University, USA |
| 2. | Prof. Julian Hayes | Massey University, New Zealand |
| 3. | Prof. Byuong-Kwan Cho | Chungnam National University, South Korea |
| 4. | Dr. Ir. Bambang Supriyanto, M.Sc. | Ministry of Environmental and Forestry of Republic Indonesia |
| 5. | Yu-Kuo Chen, Ph.D. | National Pingtung University of Science and Technology, Taiwan |
| 6. | Prof. Shinjiro Ogita | Prefectural University of Hiroshima, Japan |
| 7. | Zulhamsyah Imran | IPB University/SEAMEO BIOTROP, Indonesia |

**LIST OF INVITED SPEAKERS**
**The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes)**
**November 24-25, 2022. Hotel Merumatta Senggigi Lombok**

| No. | Name | University |
|---|---|---|
| 1. | Baiq Rien Handayani, SP., M.Si., Ph.D. | University of Mataram, Indonesia |
| 2. | Dr. Suhaizan LOB | University of Malaysia Terengganu, Malaysia |
| 3. | Asst. Prof. Dr. Pavalee Chompoorat Tridtitanakiat | Maejo University, Thailand |
| 4. | Dr. Rafael Tolosana Calasanz | Zaragoza University, Spain |
| 5. | Dr. Ansar, S.Pd., M.P., M.Pd. | University of Mataram, Indonesia |

**The 7th IC-FANRes 2022, Lombok, Indonesia**
**PARALLEL SESSION SCHEDULE (Invited & Presenter)**
**(OFFLINE)**

Room 1(On-site) : Meeting Room, Hotel Merumatta Senggigi Lombok
Topic : Agricultural, Natural Science, Food Technology, Food Security
Date : November 25, 2022
Moderator : Dr. Ansar, S.Pd., M.P., M.Pd.
Operator :

| Time | | Paper ID | Author | Titles |
|---|---|---|---|---|
| Start | Over | | | |
| 07.45 | 08.10 | | Registration | |
| 08.10 | 08.30 | Invited | Dr. Ansar, S.Pd., M.P., M.Pd. | Physical Characteristic Analysis of Shells Coconut Briquette |
| 08.30 | 08.50 | invited | Dr. Suhaizzan Lob | Potential of plant extract for plant disease control |
| 08.50 | 09.00 | - | Q&A | |
| 9.00 | 09.10 | FR020 | Amuddin, Ida Ayu Widhiantari, Rosyid Ridho, Fakhrul Irfan Khalil, Wahyudi Zulfikar | Design and Build Compost Block Pressing Machine from Organic Waste with Hidraulic System |
| 9.10 | 09.20 | FR026 | Sirajuddin Haji Abdullah, Asih Priyati , Joko Sumarsono , Gagassage Nanaluih De Side | Temperature and Humidity Control using Nextion 3.2 HMI in The Natural Greenhouse |
| 09.20 | 09.30 | FR009 | Dina Fithriyani , Amalia Wahyuningtyas, Alviany Mayska Sugiarty | Identification of Coliform, Escherichia coli Contamination, and Evaluation of GMP Fulfillment in Iced Coffee Milk Sugar Palm Drinks in Bandar Lampung |
| 09.30 | 09.40 | - | Q&A | |
| 09.40 | 09.50 | FR040 | Dewa Nyoman Adi Paramartha, Zainuri, Qabul Dinanta Utama, Ameliana Saputri, Ines Marisya Dwi Anggraini | GREEN BEAN DECAFFEINATION OF ROBUSTA COFFEE (Coffea canephora) ORIGINATED FROM RINJANI LOMBOK USING PINEAPPLE EXTRACT(Ananas comosus) |

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|---|---|---|---|---|
| 09.50 | 10.00 | FR053 | R Widyasari , B Dwi Argo , A Lastriyanto , S Wijana , K Yuniarto | Application of the Natural Antimicrobial Kayu purut (Dysoxylum parasiticum) to Delay Palm Sap (Arenga pinnata sap) Decay |
| 10.00 | 10.10 | FR056 | Lince Mukkun, Yasinta L. Kleden, Herianus J.D. Lalel | The Potential of Migratory Locusts (Locusta migratoria Meyen) As An Alternative Source of Protein, Amino Acids, And Other Important Bioactive Compounds |
| 10.10 | 10.20 | - | Q&A | |
| 10.20 | 10.30 | FR057 | S. Sukmawaty, Murad, A. Ramadhan, A. Priyati, S. Syahrul | Energy Analysis on Continue and Discontinue Drying Process of Corn (Zea Mays) Using Vertical Dryer |
| 10.30 | 10.40 | FR059 | Noni Juniati Oematan , Julinda BD. Henuk , Mayavira V. Hahuly , Agnes V. Simamora | Pathogens Associated with Potato Plants in Fatumnasi District |
| 10.40 | 10.50 | FR062 | Noni Juniati Oematan , Julinda BD. Henuk , Mayavira V. Hahuly , Agnes V. Simamora | Pathogens Associated with the Declining of Nuabosi Cassava in Ende, East Nusa Tenggara |
| 10.50 | 11.00 | FR070 | A. Priyati, S. Sukmawaty, R. P. Hari, S. Syahrul | Technical and Economic Analysis of Drying Process of Grain (Oryza Sativa) Using Vertical Dryer Machine |
| 11.10 | 11.20 | FR095 | Nurul Faziha Ibrahim, Muhammad Amali Aizat Muhammad Harisi, Suhaizan Lob | Potential of Compost Tea to Inhibit Plant Diseases in Agricultural Crops |
| 11.20 | 11.30 | - | Q&A | |
| 11.30 | 14.00 | | Lunch | Restaurant |
| 14.00 | 14.10 | FR002 | Satrijo Saloko, Lulu Qolbuani Rahman, Rini Nofrida | THE EFFECT OF TEMPERATURE AND DRYING TIME ON THE SHELF LIFE OF SERBAT FROM SOLID PALM SUGAR |
| 14.10 | 14.20 | FR037 | E. Basuki, A. Alamsyah and I W. S.Yasa | Inhibition of ACCO (1-aminocyclopropane 1-carboxylic acid oxidase ) Activity of Mango by Modified Atmosphere Storage |

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|---|---|---|---|---|
| 14.20 | 14.30 | FR043 | Angela Wulansari, Hamidin Rasulu, Ikrima M. Mustafa, Suwito, Juharni, Janiah Husen | Value Added Analysis and Development Strategy of Canned Traditional Food Sayur Lilin (Saccharum edule) |
| 14.30 | 14.40 | | Q&A | |
| 14.40 | 14.50 | FR047 | Murad, Joko Sumarsono, Sukmawaty, Amni Aulia, dan Syahroni Hidayat | Detection of Sugar Apple (Annona squamosa L.) Ripeness Based on Physical and Chemical Properties Using the K-Nearest Neighbor (k-NN) and Random Forest Algorithm |
| 14.50 | 15.00 | FR099 | Rahmat Sabani, Ari Handono Ramelan, Pranoto, Mohammad. Masykur | Community Based Integrated Organic Solid Waste Management In Sandik Village West Lombok Districh |
| 15.10 | 15.20 | FR068 | Ansar, Nazaruddin, Atri Dewi Azis | Analysis of pH value and Color of Palm Sap (Arenga pinnata Merr) during Storage |
| 15.20 | 15.30 | | Q&A | |
| 15.30 | 15.40 | FR066 | Ahmad Alamsyah, Dewa Nyoman Adi Paramartha, Qabul Dinanta Utama, Raudatul Jannah, Fihiruddin Fihiruddin, Nurul Inayati, and Lalu Unsunnidhal | The Potential of Trigona Honey as A Functional Food Solution for Malnutrition in Menggala Village, North Lombok Regency, West Nusa Tenggara Province |
| 15.40 | 15.50 | FR033 | Yelliantty | APPLICATION OF FRUIT-BASED FOOD INGREDIENT FROM ANTIDESMA BUNIUS (L.) SPRENG. IN PROCESSED FOOD |
| 15.50 | 16.00 | FR100 | Rahmat Sabani, Sukmawaty, Ansar, Murad, Hanifah Ayu | Damage Detection System for Avocado (Persea Amaricana Mill) Using Gas Sensors With Stratified K-Fold Cross Validation Method |
| 16.00 | 16.10 | | Q&A | |
| 16.10 | 16.15 | | Closing Ceremony | Ballroom |

**The 7th IC-FANRes 2022, Lombok, Indonesia**
**PARALLEL SESSION SCHEDULE (Invited & Presenter)**
**(OFFLINE)**

Room 2 (On-site) : Meeting Room, Hotel Merumatta Senggigi Lombok
Topic : Food Technology
Date : November 25, 2022
Moderator : Zainuri, Ph.D
Operator :

| Time | | Paper ID | Author | Titles |
|---|---|---|---|---|
| Start | Over | | | |
| 07.45 | 08.10 | | Registration | |
| 08.10 | 08.30 | Invited | Baiq Rien Handayani, Ph.D | Assessment of pathogenic bacteria and hazardous chemicals contamination in shrimp paste of west nusa tenggara |
| 08.30 | 08.50 | - | Q&A | |
| 08.50 | 09.00 | FR097 | Moegiratul Amaro, Winda Herliana Putri, Baiq Rien Handayani, Mutia Devi Ariyana, Tri Isti Rahayu, Sri Widyastuti, Nazzaruddin | The effect of sterilization time on organoleptic quality rarang chicken in retort bag packaging |
| 09.00 | 09.10 | FR091 | Lailatul Azkiyah, Yuli Witono, Iwan Taruna, Miftahul Choiron, Ahmad Nafi', and Anggita A. Aini | The Effect of Wall Material Ratio and Drying Methods on The Encapsulation Behavior and Antioxidant Activity of Lemuru (Sardinella lemuru) Smart Flavor |
| 09.10 | 09.20 | FR044 | Siska Cicilia, Ahmad Alamsyah, Sweca Yasa | Utilization of Yellow Sweet Potato and Telang Flower Juice to Increase Antioxidants of Cookies |
| 09.20 | 09.30 | FR085 | Novia Rahayu, Zainuri, Rini Nofrida, Dewa Nyoman Adi Paramartha, Qabul Dinanta Utama, Ines Marisya Dwi A, Amira Fathinah | The Physicochemical Properties of Green Bean Robusta from North Lombok |
| 09.30 | 09.40 | - | Q&A | |

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|---|---|---|---|---|
| 09.40 | 09.50 | FR098 | Dody Handito, I Wayan Sweca Yasa, Satrijo Saloko and Desy Wulandari | Rice Noodle (Vermicelli) Characteristics Made From Local Cultivar Red Rice and Corn Starch |
| 09.50 | 10.00 | FR089 | Zainuri, Hartanti, Dody Handito | Pumpkin enriched shirataki noodle as a low calorie and nutritious functional food |
| 10.10 | 10.20 | FR081 | Joko Sumarsono, Murad, Ida Ayu Widhiantari1, Syahroni Hidayat, Ulfah Mediaty Arief, Tatyantoro Andrasto | The Best Combination of Gas Sensor and Machine Learning Classification Algorithm in Detecting Mango (Mangifera indica L.) Quality |
| 10.20 | 10.30 | - | Q and A | |
| 10.30 | 10.40 | FR069 | Zainuri, Taslim Sjah | Quality is important, useful and the key for successful mango business |
| 10.40 | 10.50 | FR087 | Mutia Devi Ariyana, Baiq Rien Handayani, Sri Widyastuti, Nazaruddin, Moegiratul Amaro, Tri Isti Rahayu, Winda Herliana Putri and Asep Nurhikmat | Evaluation of Stability and Physicochemical Quality of "Rarang" Chicken in a Retort Pouch Packaging with Different Sterilization Times |
| 10.50 | 11.00 | FR088 | Mutia Devi Ariyana, Baiq Rien Handayani, Moegiratul Amaro, Tri Isti Rahayu, Neta Sofa Afriliya and Asep Nurhikmat | Sensory Quality of Sate Rembiga in a Retort Pouch Packaging with Different Sterilization Time |
| 11.10 | 11.20 | FR090 | Tri Isti Rahayu, Baiq Rien Handayani, Mutia Devi Ariana, Moegiratul Amaro, and Yesica Marcelina Romauli Sinaga | Combination Activity of Lactic Acid Bacterial Culture to Improve Quality of Honey Pineapple Yoghurt Enriched With Seaweed Eucheuma spinosum |
| 11.20 | 11.30 | - | Q&A | |
| 11.30 | 14.00 | | Lunch | Restaurant |
| 14.00 | 14.10 | FR083 | Sri Wahyuningsih, Fajar Adi Maulana | Determination of groundwater quality for minapadi using the iwqi method in sanenrejo village, jember regency |

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| 14.10 | 14.20 | FR064 | Baiq Rien Handayani, Afrisha Sekar Namira, Mutia Devi Ariyana, Moegiratul Amaro, Tri Isti Rahayu, Asep Nurhikmat | Physical and sensory quality of canned “rarang”chicken under sterilization time difference |
| 14.20 | 14.30 | FR092 | Satrijo Saloko, Siska Cicilia, Lara Mahya Adila2 | Development of Functional Sausage Made of Corn Starch and Moringa Flour With The Addition of Mocaf (Modified Cassava Flour) and Porang Flour |
| 14.30 | 14.40 | | Q&A | |
| 14.40 | 14.50 | FR032 | Wilbur Donald Raymond Pokatong, Febiana Christy | Partial Substitution with Heat-Moisture Treated Sweet Potato (Ipomoea Batatas L.) Flour To Wheat Flour Affecting Physicochemical and Organoleptic Characteristics of Pan Bread |
| 14.50 | 15.00 | FR086 | Rosyid Ridho, Asih Priyati, Joko Sumarsono, Qabul Dinanta Utama, Tina Afriana, Deas Fitriani Sahrani Jayadi | Test of Consistency, Hardness, and Water Absorption on Innovative Planting Media (Block Compost) as a Solution for Utilization of Oyster Mushroom Baglog Waste |
| 15.10 | 15.20 | FR067 | Qabul Dinanta Utama, Zainuri, Dewa Nyoman Adi Paramartha, Ines Marisya Dwi Anggraini, Amira Fathinah | The Physicochemical Properties of Green Been Arabica From Different area in Lombok Island |
| 15.20 | 15.30 | FR063 | Lalu Unsunnidhal, Nazaruddin, Dewa Nyoman Adi Paramartha, Qabul Dinanta Utama, Raudatul Jannah, Lalu Riza, Sukarne | The Quality of Liquid Sugar from Sorghum Grown in East Lombok Regency, West Nusa Tenggara Province with The Addition of Natural Complementary Ingredients |
| 15.30 | 15.45 | FR096 | Fakhrul Irfan Khalil Rahmat Sabani | Simulation Of Turbine Road Wheel (Runner) Models in Microhydro Power Plant (PLTMH) Systems by Completing Dimensional Analysis |
| 15.45 | 16.00 | | Q&A | |

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|---|---|---|---|---|
| 16.00 | 16.15 | | Closing Ceremony | Ballroom |

**The 7th IC-FANRes 2022, Lombok, Indonesia**
**PARALLEL SESSION SCHEDULE (Invited & Presenter)**
**(ONLINE)**

Room 3 (online) : Zoom Meeting
Topic : Agricultural, Natural Resources,
Date : November 25, 2022
Moderator : I Wayan Sweca Yasa, M.Si
Operator :

| Time | | Paper ID | Author | Titles |
|---|---|---|---|---|
| Start | Over | | | |
| 08.00 | 08.30 | | Registration | |
| 08.30 | 08.40 | FR001 | Yanna Yahya, Machmud Ahmad, Iqbal | ANALYSIS OFF MASS AND ENERGY BALANCE ON CORN AGROINDUSTRY IN SIDENRENG RAPPANG REGENCY (CASE STUDY : CV. CAHAYA MARIO) |
| 08.40 | 08.50 | FR005 | Andi Jaya Nasaruddin, Fithri Choirun Nisa, Mochamad Nurcholis | The Effect of Ultrasonication Pretreatment Process on The Characteristics of Goat Milk Yoghurt |
| 08.50 | 09.00 | FR007 | Sandra, Retno Damayanti, Mochamad Bagus Hermanto, Rut Januar Nainggolan, Danuh Kanara Anta, Arini Robbil, Siska Ratna Anggraeni, Mitha Saadiyah | Identification of nitrogen content of Vernonia amygdalina leave based on artificial neural network modeling |
| 09.00 | 09.10 | - | Q&A | |
| 09.10 | 09.20 | FR008 | Tri Dewanti Widyaningsih, Fithri Choirun Nisa, Fitri Khoirunnisa' Maftuch, Novia Dewi Putri Agus Pranoto l | OPTIMIZATION OF HERBAL JUICE FORMULA (MIXTURE OF SINGLE ONION, RED GINGER, LEMON, APPLE Vinegar, AND HONEY) AS A FUNCTIONAL BEVERAGE |
| 09.20 | 09.30 | FR010 | Neyla Vista Maramy, Tri Dewanti Widyaningsih, Erryana Martati, Zahra Zafira | OPTIMIZATION FORMULA OF MINASARUA FROM BIMA WEST NUSA TENGGARA AS A FUNCTIONAL BEVERAGE |

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|---|---|---|---|---|
| 09.30 | 09.40 | FR011 | Melanie Cornelia, Vanessa, Titri S Mastuti, Reynaldi | Characteristics of Fruit Wine from Several Types of Banana with Various Types of Yeast |
| 09.40 | 09.50 | - | Q&A | |
| 09.50 | 10.00 | FR014 | Wisnu Cahyadi, Anis Nur Farida, Yusep Ikrawan | "Effect of Yeast Concentration and Moromi Fermentation During toward The Characteristics of Sorghum Grain Sweet Soy Sauce (Sorghum Bicolor (L.) Moench)" |
| 10.00 | 10.10 | FR021 | Eunike Budiman, Tagor M. Siregar | EFFECT OF COATING MATERIAL RATIO AND SPRAY DRYER INLET TEMPERATURE ON THE CHARACTERISTICS OF BUTTERFLY PEA FLOWER (Clitoria ternatea L.) EXTRACT MICROCAPSULE |
| 10.10 | 10.20 | FR024 | Ratna Nurmalita Sari, Nuramaliyah | Maternal Legumes and Nuts Consumption is Associated with Protein Content in Human Milk |
| 10.20 | 10.30 | - | Q&A | |
| 10.30 | 10.40 | FR034 | Yusuf Hendrawan, La Choviya Hawa, Retno Damayanti, Dimas Firmanda Al Riza, Mochamad Bagus Hermanto, Sandra Malin Sutan | Optimized Digital Webcam with Hungry Roach Infestation Optimization to Monitor the Drying Process of Cassava Chips |
| 10.40 | 10.50 | FR036 | Ratri Retno Utami, Andi Nur Amalia, M. Ardhias Syam, Rahmad Wahyudi, Rachma Ramadhanty Tabri | Application of Hygiene and Sanitation in The Hairtail Fish Freezing Industry |
| 10.50 | 11.00 | FR046 | Widya Dwi Rukmi Putri, Ambo Wellang, Joni Kusnadi, Wenny Bekti Sunarharum, Mokhamad Nur | Pectin Extraction of Red Dragon Fruit Peels (Hylocereus polyrhizus) and Its Potency for Bioplastic Production |
| 11.00 | 11.10 | FR051 | Susanawati, Siti Nurul Aldina, Heri Akhmadi | Responsibility of Red Chili Supply Chain in The Production Center of Yogyakarta |

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|---|---|---|---|---|
| | | | | Indonesia Based on Performance Measurement System |
| 11.10 | 11.20 | - | Q&A | |
| 11.20 | 14.00 | | Lunch | Restaurant |
| 14.00 | 14.20 | Invited | Dr. Rafael Tolosana Calasanz | IoT technologies applied to forestry |
| 14.20 | 14.30 | | Q&A | |
| 14.30 | 14.40 | FR055 | Dian Hasni, Cut Nilda , Murna Muzaifa, Dini Fadillah, Syafina Asra, and Dedy Rahmad | Consumer Acceptance of Herbal Tea Brewing Based on Cascara Dayak Onion Ratio and Infusion Time |
| 14.40 | 14.50 | FR073 | Tasya Chairuna Pane and Muhammad Khaliqi | The effect of religiosity level on the perceptions of young Muslim consumers towards Halal food criteria in Indonesia |
| 14.50 | 15.00 | FR074 | A D Anggita, E Wahyuni, D Maharani, Nurliyani | The quality and chemical composition of eggs derived from Kampung Unggul Balitbangtan (KUB) crossed with Merawang and Murung Panggang local chickens |
| 15.10 | 15.20 | | Q&A | |
| 15.20 | 15.30 | FR075 | Eni Istiyanti, Dian Widi Anitasari, Retno Wulandari | The Development Strategy of Organic Rice Farming in Bantul Regency, Special Region of Yogyakarta, Indonesia |
| 15.30 | 15.40 | FR080 | I Wayan Sweca Yasa, Eko Basuki, Ahmad Alamsyah, Lingga Gita Dwika Sari | The Application of Nata de coco-based Coatings to Fresh-cut Jackfruits during Refregerated Storage |
| 15.40 | 15.50 | - | Q&A | |
| 15.50 | 16.15 | | Closing Ceremony | Ballroom |

**The 7th IC-FANRes 2022, Lombok, Indonesia**
**PARALLEL SESSION SCHEDULE (Invited & Presenter)**
**(ONLINE)**

Room 4 (online) : Zoom Meeting
Topic : Agricultural, Natural Science
Date : November 25, 2022
Moderator : Dr. Kurniawan Yuniarto
Operator :

| Time | | Paper ID | Author | Titles |
|---|---|---|---|---|
| Start | Over | | | |
| 08.00 | 08.30 | | Registration | |
| 08.30 | 08.50 | Invited | Asst. Prof. Dr. Pavalee Chompoorat Tridtitanakiat | modeling rheological properties of gluten-free red kidney bean cupcake with rice flour addition |
| 08.50 | 09.00 | - | Q&A | |
| 09.00 | 09.10 | FR006 | Bambang Susilo, Mochamad Bagus Hermanto, Retno Damayanti, Pipit Elok Nikmatus Sholikah | The performance of a modified dehumidifier drying machine for peanut seeds (Arachis hypogaea L.) drying |
| 09.10 | 09.20 | FR012 | Dini Retno Widyaningsih, Ning Puji Lestari and Dian Purbasari | Life cycle assessment of coffee processing processes at cafe bromo probolinggo |
| 09.20 | 09.30 | FR015 | Ach. Fauzan Mas'udi, Marga Mandala, Priza Pandunata, Shinta Hapsari | Mapping of Soil Quality Index for Dryland in Pasuruan Regency, East Java, Indonesia |
| 09.30 | 09.40 | - | Q&A | |
| 09.40 | 09.50 | FR016 | Mohamad Wawan Sujarwo, Arif Rohmattulloh, Indarto Indarto, Siswoyo Soekarno, Rufiani Nadzirah. | Land Use and Land Cover (LULC) Changes in The Eastern area of East Java on Urban Segmentation: Sentinel Imagery Based |
| 09.50 | 10.00 | FR017 | Mahrus Irsyam, Indarto, Farid Lukman Hakim, Achmad Subagio | Using IFSAR DEM to Design of Site-Plan and Site-Grading in Cassava Plantation |

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|---|---|---|---|---|
| 10.00 | 10.10 | FR018 | Inayatus Nur Dwiyanti,, Riska Rian Fauziah, and Ancah Caesarina Novi Marchianti2 | Identification Sensory Profile of Noni Juice Health Drink Using Quantitative Descriptive Analysis (QDA) Method |
| 10.10 | 10.20 | - | Q&A | |
| 10.20 | 10.30 | FR019 | Chairiyah Umi Rahayu, Mahrus Irsyam,Indarto Indarto, Bayu Taruna WP, and Siswoyo Soekarno | UAV mapping for wide areas cassava food estate plantation design |
| 10.30 | 10.40 | FR030 | Ning Puji Lestari, Siswoyo Soekarno, Amal Bahariawan, Tasliman, Taufan Sugiarto | Characteristics of Corn (Zea Mays) Seeds Drying Using a Vertical Rack-Type Dryer |
| 10.40 | 10.50 | FR031 | Rufiani Nadzirah, Priza Pandunata, Indarto Indarto, Ivo Joan Pamungkas, Nanak Hariyanto, Ricco Andika. | Characteristics of Red Beans (Phaseolus vulgaris L.) Seeds Drying Using a Vertical Rack-Type Dryer |
| 10.50 | 11.00 | - | Q&A | |
| 11.00 | 11.10 | FR041 | Farid Lukman Hakim, Indarto Indarto, Bowo Eko Cahyono | Assessment of Land Use and Land Cover Change in East Java from 1972 to 2021 |
| 11.10 | 11.20 | FR042 | Aris Slamet Widodo, Gatot Supangkat, Mulyono, Bahrul Ulum | Development of Floating Rice Cultivation Technology in Community-Based Peat Swamp Land in East Kalimantan |
| 11.20 | 11.25 | - | Q&A | |
| 11.25 | 14.00 | | Lunch | Restaurant |
| 14.00 | 14.10 | FR045 | Mochamad Bagus Hermanto, Retno Damayanti, Yusuf Hendrawan | The design and performance of maggot harvester |
| 14.10 | 14.20 | FR071 | Kurniawan Yuniarto, Cahyo Mustiko Okta Muvianto, Fatimah Khairunnisa | The Ultrasound Cavitation on Physical and Chemical Attributes of Lemongrass Oil |

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|---|---|---|---|---|
| 14.20 | 14.30 | FR076 | WINALDHA AISYALHANI DAMAR PUTRI, ENI HARMAYANI, SRI RAHAYOE | Effect of using re-distilled ethanol for glucomannan extraction process from porang flour (amorphophallus oncophyllus) on the physicochemical characteristics of glucomannan |
| 14.30 | 14.40 | | Q&A | |
| 14.40 | 14.50 | FR078 | Putri Prasada Mukti, Eni Harmayani, Sri Rahayoe | EFFECT OF SODIUM METABISULFITE IN GLUCOMANNAN EXTRACTION PROCESS FROM PORANG FLOUR (Amorphophallus onchophyllus) ON CHEMICAL AND PHYSICAL CHARACTERISTICS OF GLUCOMANNAN |
| 14.50 | 15.00 | FR082 | La Rianda Baka, Tamrin, Idrus Salam, Ulyasniati, Halija Koso | An analysis on determination of key elements of coconut processing business development system problems in konawe district, islands through interpretive structural modelling method |
| 15.10 | 15.20 | FR084 | Diah Indriani Widiputri, Benedick Donato, Maria DPT Gunawan-Puteri, Filiana Santoso, Elena Listianto Lie | Ethanolic Extraction of Lemongrass in a Scaled-Up Laboratory Percolator |
| 15.20 | 15.30 | - | Q&A | |
| 15.30 | 15.40 | FR094 | Agriananta Fahmi Hidayat, Taufik Djatna | Food production prediction based on fuzzy associative memory modeling |
| 15.40 | 15.50 | | | |
| 15.50 | 16.00 | - | Q&A | |
| 16.00 | 16.15 | | Closing Ceremony | Ballroom |

# ABSTRACTS OF KEYNOTE

## The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes)

## November 24-25, 2022. Hotel Merumatta Senggigi Lombok

## The effect of acetylation on the biological activities of polymethoxyflavones

**Yu-Kuo Chen**

**Department of Food Science, National Pingtung University of Science and Technology, Pingtung, Taiwan**

Chemical modification, one of the most common methods to produce prodrugs, is performed by adding another moiety, most commonly an ester, to introduce lipophilicity and bury the hydrogen-bonding groups of the parent drugs. We investigated the effect of acetylation on the biological activities of polymethoxyflavones, including anticancer activity and oral bioavailability as well as neuroprotective capacity. Our results showed that acetylation enhanced the anticancer activity of 5-demethyltangeretin by enhancing the induction of apoptosis and cell cycle arrest in prostate cancer cells. Acetylation also increased the blood levels and tissue distribution of 5-demethyltangeretin in mice to improve its oral bioavailability. Moreover, acetylated nobiletin also significantly ameliorated Alzheimer's-like cognitive impairment induced by methylglyoxal, a precursor of advanced glycation end products (AGEs). In conclusion, acetylation strongly enhances the biological activities of polymethoxyflavones and could be a promising strategy to promote the potential bioactivities of natural products.

Keywords: polymethoxyflavones; acetylation; anticancer; bioavailability; neuroprotective

**Cellular agriculture development has potential to change food technological research and its application to food security**

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Faculty of Bioresource Sciences, Department of Development of Local Resources, Prefectural University of Hiroshima https://shobaralr.pu-hiroshima.ac.jp/en/

Plant cell tissue and organ culture (PCTOC) is now thought to be the underlying technique for understanding general or specific biological functions of the plant kingdom, and it is one of the most flexible foundations for morphological, physiological and molecular biological applications of plants. Some case studies developed in our laboratory that involve the establishment of efficient PCTOC models are discussed. Cellular agriculture is a next-generation production method that uses cell culture technology to produce food and other resources. In this meeting, I am going to talk about "current challenges and perspectives of plant biotechnology and cellular agriculture" for better understanding of these important areas.

**Fermentation as the center to power transformation and innovation from news to oldest: animal – free heme, culture meat and sourdough**

Prof. Patricia Rayes-Duarte

Oklahoma State University, USA

This review aims to highlight a section of the food systems with great potential to contribute with innovation of producing foods with lower carbon print. For centuries, Asean countries have traditionally employed fermentation to add value or transform raw materials into better products. Native traditional fermented products in every country conquered the quest to improving food products with better quality by understanding their systems in addition to art and culture connections. We proposed that the fermentation processing continues to be the center of transformation and innovations today. We will report the pivotal stage of two cases fermentation: 1) precision fermentation to support animal-free ingredients and 2) combined old and precision fermentation to support traditional products such as sourdough. Advances in the understanding of these systems will be discussed.

# ABSTRACTS OF PRESENTER

## The 7th International Conference on Food, Agriculture, and Natural Resources (IC-FANRes)

## November 24-25, 2022. Hotel Merumatta Senggigi Lombok

**FR001**

# ANALYSIS OFF MASS AND ENERGY BALANCE ON CORN AGROINDUSTRY IN SIDENRENG RAPPANG REGENCY (CASE STUDY : CV. CAHAYA MARIO)

Yanna Yahya[1] , Machmud Ahmad[1], Iqbal[1]
[1)]Program Studi Magister Teknik Agroindustri , Pascasarjana Universitas Hasanuddin, Makassar
Email : yanna.yahya.y@gmail.com

**Abstract.** The increase in corn production as one of the raw materials in the livestock industry is triggered by the increasing demand for eggs and chicken meat in the market. Livestock has an important role in supporting the availability of animal protein in the community. The high price of feed corn in recent times has an impact on the increase in feed prices. Meanwhile, the price of live chickens and broiler eggs is falling, causing farmers to find themselves in a difficult situation. This encourages livestock entrepreneurs to produce their own feed. CV. Cahaya Mario as one of the livestock businesses has also established a chicken feed factory to meet the internal needs of chicken feed. This business was established on December 29, 2021, with a factory capacity of 35 tons per day, of course, it is expected to produce quality and affordable feed. This study aims to analyze the mass and energy balance of the CV. Cahaya Mario. This research was conducted in Kulo sub-district, Sidenreng Rappang Regency from July – September 2022. This research procedure has 2 stages, namely mass balance analysis and energy balance. In mass balance, calculating the mass of incoming and outgoing materials and measuring the content of materials in the form of water content, ash content, protein and fat. Energy balance, in the analysis of internal and external energy. Internal energy from changes in temperature of materials and external energy from energy sources and mechanical processes. This study shows that the feed process takes place in a continuous flow. Mass balance analysis was carried out for each process and it was found that there was an equilibrium efficiency above 90%. From the results of the analysis of the content of feed ingredients, it was found that the content of water content (10%), ash content (19%), fat (2.78%) and dissolved protein (0.08%). For the analysis of electrical energy input to the hammer mill is 120.244125 Kwh, while the electrical energy to the mixer is 22.242.7 Kwh. The size reduction energy for corn in the hammer mill is 11.56 MJ/ton, for soybean meal it is 0.2 MJ/ton. The energy of weighing material is 2.63 MJ/ton and the energy of mixing (mixer) is 7.06 MJ/. The energy balance in the corn grinding process is 119.94 MJ, while the soybean meal is 19.9 MJ.
**Keywords:** Animal Feed, Mass and Energy Balance, Hammer Mill, Mixer, Size Reduction.

**FR002**

# THE EFFECT OF TEMPERATURE AND DRYING TIME ON THE SHELF LIFE OF SERBAT FROM SOLID PALM SUGAR

Lulu Qolbuani Rahman[1)], Satrijo Saloko[2)], Rini Nofrida[2)]
[1)]Graduate Student of the Faculty of Food Technology and Agroindustry, University of Mataram
[2)]Lecturer of the Faculty of Food Technology and Agroindustry, University of Mataram
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**Abstract.** The aim of this research was to determine the effect of temperature and drying time on the shelf life of serbat from solid palm sugar. The method used in this research is an experimental method with a completely randomized block design (RCBD) of two factors with 6 treatments and 3 replications. The factors consist of drying temperature of 50o and 80o C and drying time of 1 hour, 2 hours and 3 hours. Parameters observed were chemical quality (moisture content, antioxidant activity, and sucrose content), physical quality (bulk density and color), and organoleptic quality (taste and aroma). The results showed that the interaction between drying temperature and drying time had an effect on chemical quality (antioxidant activity), physical quality (bulk density) but did not affect to chemical quality (moisture content, and sucrose content), as well as physical quality (oHue value), organoleptic quality aroma and taste hedonic test and scoring. The main stage of research regarding the quality of chemical quality, physical quality, and organoleptic quality showed that the results of the drying temperature treatment of 80o C with a drying time of 3 hours produced serbat with the best quality with 2.54% water content, 88.29% antioxidant activity, sucrose content is 63.52%, bulk density is 0.69 g/cm3, color is 66.93 (yellow red), has a spice taste, and has a spice aroma. Serbat was stored using aluminum foil for 42 days at temperatures of 25o, 30o, and 35o C. The calculation results of the Arrhenius model selected the water content parameter as a critical parameter to determine the shelf life of the serbat. The results showed that the shelf life for the best treatment at a drying temperature of 80o C with a drying time of 3 hours, the shelf life of serbat storage at 25o C was 283 days, storage at 30o C was 251 days, and storage at a temperature of 35o C was 179 days.
**Keywords:** Serbat, Drying, Shelf life, ASLT, Arrhenius

**FR005**

# The Effect of Ultrasonication Pretreatment Process on The Characteristics of Goat Milk Yoghurt

Andi Jaya Nasaruddin[1, a)] Fithri Choirun Nisa[2], Mochamad Nurcholis [2)]
[1]Student of Agricultural Product Technology Department, Faculty of Agricultural Technology, Universitas Brawijaya, Malang, Indonesia
[2]Lecturer of Agricultural Product Technology Department, Faculty of Agricultural Technology, Universitas Brawijaya, Malang indonesia
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**Abstract.** Ultrasonication has been identified as one of the promising processing technologies in the dairy industry. Goat milk has nutritional advantages when compared to other types of milk. Goat's milk has a goaty flavour and is considered as one of the factors that causes the lack of acceptance of goat's milk. Processing of goat's milk into yogurt is able to reduce the intensity of the goaty flavour but has low consistency and coagulation properties. Ultrasonication given before fermentation was able to give positive results on the gel texture of fermented milk. The combination of temperature and time of ultrasonication is an important factor. In this study, the effect of ultrasonication time and the combination of temperatures used on viscosity, syneresis, acidity and total acid will be investigated.
**Keywords:** ultrasonication, goat milk, yogurt

**FR006**

# The performance of a modified dehumidifier drying machine for peanut seeds (Arachis hypogaea L.) drying

Bambang Susilo[1], Mochamad Bagus Hermanto[1], Retno Damayanti[1], Pipit Elok Nikmatus Sholikah[1]

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**Abstract**. The peanut production in Indonesia is about constant at 500.000 to 700.000 tons every year from 1993 to 2018. Since the increase in the Indonesian population will affect the increasing need for peanut consumption in Indonesia. To increase peanut production is by producing high-quality peanut seeds. The water content of harvested peanuts was ranging from 35% to 40%. To produce high-quality seeds, drying should perform with a standard drying temperature for seeds. The previous model of dehumidifier drying machine was equipped with a heat recovery system from the condenser of the air conditioning system. The modified model takes not only the heat from the condenser but also the heat from unexploited humid hot air out from the drying chamber to the heat recovery system. This research aims to evaluate the performance of a modified dehumidifier drying machine for peanut seed drying. A performance test was conducted until the peanut seeds reach less than 10% moisture content with three different drying temperature settings of 30°C, 40°C, and 50°C. This modified drying machine was built to increase the performance of the previous model of dehumidifier drying to increase its energy efficiency. The performance analysis is based on the temperature and humidity distribution, the seeds' moisture content, the drying rate, the drying duration, the seed germination test, the energy consumption, and the energy efficiency calculation for peanut seeds production. The fluctuation of the ambient temperature and humidity nearly does not affect the drying temperature and humidity at the drying chamber. The machine can decrease the air humidity level for drying to less than 30 %. The modified hot air recirculation system can increase energy efficiency.
**Keywords**: peanut seed, seed drying, dehumidifier drying, peanut seed germination

**FR007**

# Identification of nitrogen content of Vernonia amygdalina leave based on artificial neural network modeling

Sandra, Retno Damayanti*, Mochamad Bagus Hermanto, Rut Januar Nainggolan, Danuh Kanara Anta, Arini Robbil, Siska Ratna Anggraeni, Mitha Saadiyah

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Abstract

The level of greenness or the content of chlorophyll in the leaves is one indicator of plant health, where plants that are fertile and have enough nutrients will look green on their leaves. This indicates that the nitrogen (N) content, which is one of the constituents of leaf chlorophyll, has been fulfilled properly so that it will increase plant productivity higher. *Vernonia amygdalina* is an herbal plant that is widely consumed in the treatment of diabetes. Knowing the nitrogen content in a plant can inform nutritional needs and monitor plant development quickly and precisely. The purpose of this research is to develop a mathematical model to predict the chlorophyll and nitrogen content in leaves using a machine vision method with texture and color analysis. Texture analysis uses the color features of Grey, RGB, HSL, HSV, and L*a*b* and the color co-occurrence matrix (CCM). The best 8 features were obtained using Correlation as a selection attribute. The relationship between the value of texture and color features on the nitrogen content of leaves has different values. Red Maximum Probability is a feature with a higher coefficient of determination than other texture features, which is 0.0361. The best ANN model was selected from 75% of training data and 25% of validation data with a structure of 8-30-40-2 with a learning rate value of 0.1 and momentum 0.5, trainlm as the selected learning function, tansig the activation function in the hidden layer and output layer. The selected ANN structure produces a validation correlation coefficient (R) of 0.99073 and a validation MSE of 0.0793.

Keyword : ANN, chlorophyll, color, nitrogen

**FR008**

# OPTIMIZATION OF HERBAL JUICE FORMULA (MIXTURE OF SINGLE ONION, RED GINGER, LEMON, APPLE Vinegar, AND HONEY) AS A FUNCTIONAL BEVERAGE

Tri Dewanti Widyaningsih, Fithri Choirun Nisa, Fitri Khoirunnisa' Maftuch, Novia Dewi Putri Agus Pranoto l

Background: Indonesian people have long known and used medicinal plants as an effort to overcome health problems. This can be seen from the trend of consuming herbal medicines in the community such as herbal medicine, but not everyone likes herbs. One alternative for developing herbal medicines that are beneficial to health and contains high antioxidant activity is the manufacture of functional beverage that are formulated with a number of herbal ingredients such as single onion, red ginger, honey, apple cider vinegar and lemon. Apart from being a diversification effort, the choice of this material is also expected to work together to improve sensory characteristics. Objectives: Getting the optimal herbal juice formula single onion, red ginger, honey, apple vinegar and lemon as a functional beverage Methods: Optimization of herbal juice formula using Mixture Design D-Optimal method with independent variables, namely single onion, red ginger and lemon. The responses used were the antioxidant activity of the DPPH method, total phenols, and total flavonoids. The optimal formula was then tested with these three parameters using a spectrophotometer. Results: The optimal formula obtained based on Mixture Design D-Optimal analysis was single onion 31,04 g (20,69%), red ginger 30,68 g (20,45%) and lemon 20,79 g (13,86%) with a desirability value of 1. The antioxidant activity of the formula after verification was 0,51 ± 3,25 mg TE/g, total phenol 220,92 ± 264,54 mg GAE/g, and total flavonoids 152,04 ± 191,42 mg QE/g Conclusions: Therefore, this formula is recommended as the best formula which has an optimum antioxidant activity to produce herbal juice as a functional beverage.

Keywords: Optimization of Formula, herbal juice, single onion, red ginger, honey, apple vinegar, lemon, functional beverage

**FR009**

# Identification of *Coliform, Escherichia coli* Contamination, and Evaluation of GMP Fulfillment in Iced Coffee Milk Sugar Palm Drinks in Bandar Lampung

Dina Fithriyani[1, a.] , Amalia Wahyuningtyas[1, b.], Alviany Mayska Sugiarty [1, c.]
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**Abstract.** Coffee drinks are processed drinks of ground coffee, sugar, and water which are processed through a heating process with or without the addition of other ingredients. The increase in consumer interest due to lifestyle changes has made coffee drinks a trend. The use of raw materials for coffee, water, ice, milk, and sugar can increase the risk of *coliform* and *Escherichia coli* contamination if they do not meet the criteria for Good Manufacturing Practices (GMP). This study aims to identify *coliform* and *E. coli* contamination and evaluate the fulfillment of GMP criteria for palm sugar iced coffee drinks in Bandar Lampung City. The research method used is the MPN (Most Probable Number) method and analyzed descriptively and GMP evaluation. The results of the 5 samples tested showed that 4 samples were positively contaminated with *coliform* and *E. coli* which did not meet the contamination limit and based on the GMP evaluation the contamination in the sample was caused by sanitation and hygiene during processing that was not considered properly.
**Keywords**: *Coffee, Coliform, Escherichia coli, GMP.*

**FR010**

# OPTIMIZATION FORMULA OF MINASARUA FROM BIMA WEST NUSA TENGGARA AS A FUNCTIONAL BEVERAGE

Neyla Vista Maramy[1)], Tri Dewanti Widyaningsih[1)]*, Erryana Martati[1)], Zahra Zafira[1)]

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Minasarua became one of the traditional beverages from Bima, West Nusa Tenggara which consists of spices, fermented black glutinous rice, tai mina, and palm sugar. This product is sold and consumed by local people with various formulas, especially in terms of types and quantities of spices and fermented black glutinous rice. This study aimed to optimize the formula of Minasarua which has optimum antioxidant activity. The method used was Mixture Design D-Optimal using Design Expert 13 software with independent variables, namely ginger, turmeric, Javanese long-pepper, pepper, and fermented black glutinous rice. There were 25 formulas of Minasarua with different percentages of each component observed in this research. The antioxidant activity (DPPH method), total phenolic content (Folin Ciocalteu method), and total flavonoid content (pH differential method) were tested using a spectrophotometer in response to all the formulas. The results of the optimization showed that Minasarua with 10.9% ginger, 0.1% turmeric, 4.5% Javanese chili pepper, 4.5% pepper and 80% fermented black glutinous rice were able to respond to the antioxidant activity of 102.5 mg TE/gram (88.50% antioxidant capacity), with total phenol and flavonoid content were 859.351 mg GAE/gram and 222.684 mg QE/gram, respectively, and the desirability of 0.914. There was no significant difference between the predicted and verification values of the three responses. Therefore, this formula is recommended as the best formula which has an optimum antioxidant activity to produce Minasarua as a functional beverage.

Keywords: Antioxidant, Formula, Minasarua, Optimization

**FR011**

# Characteristics of Fruit Wine from Several Types of Banana with Various Types of Yeast

Melanie Cornelia[1)] ,Vanessa[2)], Titri S Mastuti [3)], Reynaldi [4)]
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**Abstract.** Banana is a fruit that is ranked the highest of production in Indonesia with complete nutritional value. However, they can undergo rapid deterioration in quality with a relatively short shelf life. Fermentation is considered as an interesting and simple method of reducing post-harvest loss of highly perishable fruits such as banana. One of the products obtained from juice fermentation is fruit wine. The objective of this research are to produce wine using various types of bananas, types of yeasts, and fermentation periods. This banana wine is made from “pisang ambon lumut”, “pisang raja bulu”, and “pisang mas” with yeast Saccharomyces cerevisiae, Saccharomyces bayanus, and ratio Saccharomyces cerevisiae : Saccharomyces bayanus (1:1), and fermentation time of 7, 9, 11, 13, and 15 days. The total soluble solid, pH, total titratable acidity, alcohol content, clarity, lightness, and color are analyzed for each treatment along with organoleptic test which consists of scoring and hedonic test. The best quality banana wine from this research is wine made from “pisang mas" with Saccharomyces cerevisiae yeast that has been fermented for 13 days. The banana wine has a total soluble solid of 13.25°Brix, pH of 3.21, total titratable acidity of 0.78%, an alcohol content of 8.03%, clarity of 88.23%, yellow in color with a °Hue of 122.30, total flavonoids of 7.46µg QE/mL, total phenolic of 56.17µg GAE/mL, IC50 of 27.9%, and favored by panelists.

Keywords: banana, fermentation, wine, yeast

**FR012**

# LIFE CYCLE ASSESSMENT OF COFFEE PROCESSING PROCESSES AT CAFE BROMO PROBOLINGGO

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Abstract. The coffee processing process at Cafe Bromo Probolinggo can cause environmental pollution and has the potential to produce greenhouse gases (GHG) due to inefficient use of energy. The processing process that uses technology and produces waste that has not been handled so that it is not environmentally friendly. This study aims to determine how big the impact of coffee processing at Cafe Bromo Probolinggo and the waste generated from each coffee production process, so that it can be said to be an environmentally friendly product. The method used in this research is Life Cycle Assessment (LCA) which has stages of determining objectives and scope, life cycle inventory, life cycle impact assessment and interpretation. Processing of coffee products at Cafe Bromo Probolinggo produces a GWP of 21.2768 kg CO2-eq and the efficiency of energy use shows a NER value of 0.02 and a NEV of -153.94. The recommended alternative for improvement is the use of coffee horn skin which is processed into briquettes as a substitute for LPG fuel in the roasting process. If the alternative recommendations are implemented, it can reduce the GWP value to 20.4374 kg CO2-eq and increase energy use efficiency up to the NER value of 1.09 and NEV of 9.86. The environmental impact resulting from this research is the amount of greenhouse gases (GHG) produced from the organic robusta coffee production process, if not repaired it will pollute the surrounding environment.

Keyword : LCA, coffee, GWP, energy.

**FR014**

# Effect of Yeast Concentration and Moromi Fermentation During toward The Characteristics of Sorghum Grain Sweet Soy Sauce (Sorghum Bicolor (L.) Moench)

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Abstract. Sweet soy sauce is a liquid product that is usually made from soybeans. However, despite the threat of a global food crisis and the high level of Indonesia's dependence on soybean imports, sorghum is a solution as a substitute for making sweet soy sauce. This study aims were to determine the influence between yeast concentration and moromi fermentation duraing toward the characteristics of sweet soy sauce sorghum grains. The research method were carried out in some steps, including the first stage of determining the content of components in sorghum grains and the second stage of determining the influence of yeast concentration and moromi fermentation duration on the characteristics of sorghum grain sweet soy sauce. The statistical design was used a Randomized Group Design (RGD), with the first factor being yeast concentrations of 0.1%, 0.2%, and 0.3%, the second factor being the moromi fermentation duration of 2 weeks, 3 weeks, and 4 weeks. The research results, the first phase of the study, showed that bioguma 1 Agritan sorghum grains contain a protein content of 10.67%, water content of 9.93%, crude fiber of 2.33%, and tannin content of 0.22%. At the same time, the results of the second stage of the study showed that the filtrate protein content of moromi fermentation results was 4.05% - 5.08% and pH 3.0-3.3. The protein content of sweet soy sauce is 3.15% – 4.07%, the reducing sugar content is 1.54% – 3.08%, and the viscosity value is 2,744 Cp – 145,200 Cp. The sweet soy sauce products obtained have a good taste, aroma, color, and viscosity, almost the same as the sweet soy sauce circulating in the market. Overall, the results of this study show that sorghum grain sweet soy sauce can be a solution to increasing food diversification.

Keywords: Sweet Soy Sauce, Sorghum Grain, Yeast, Moromi Fermentation

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**FR015**

# Mapping of Soil Quality Index for Dryland in Pasuruan Regency, East Java, Indonesia

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**Abstract.** Dry land has the potential as an alternative for increasing crop production. Soil quality index can be used to determine the direction of management on dry land. This study aims to determine the level and distribution of dry land quality in Pasuruan Regency, Indonesia. The data needed includes data on soil types, slopes, land use, and data on soil quality analysis. Data analysis using Excel 2016, and Q-GIS. Soil quality mapping has four main stages, (1) making a map of land units, (2) sampling and analyzing soil properties, (3) assessing soil quality index and (4) mapping soil quality. Based on the results of the analysis, there are 10 land units in Pasuruan Regency. Soil samples were taken as many as 175 samples (5 replicates x 35 points). Dry land in Pasuruan Regency is divided into two classes of soil quality, namely rather poor (25% of the total land area) and moderate (75%). The main problem found in dry land in Pasuruan is the content of organic matter and low P-total content. The recommendation for dry land management is the addition of organic matter to increase the efficiency of fertilization in plant cultivation in the dry land.

**Keywords:** *Mapping, Soil Quality Index, Dryland, Pasuruan*

**FR016**

# Land Use and Land Cover (LULC) Changes in The Eastern area of East Java on Urban Segmentation: Sentinel Imagery Based

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**Abstract.** The population and economy of the eastern area of East Java tends to increase. The regulations on the protection of sustainable food agricultural land (LP2B) trigger the residential and industrial development to be concentrated in urban areas. This urbanization causes social and economic growth but has a negative impact on the environment. Sentinel image-based remote sensing is useful for identifying LULC in the eastern area of East Java on urban segmentation. The changes are analyzed by comparing two maps interpreted from of Sentinel Images (2015 and 2022) are downloaded using Google Earth Engine (GEE). Main research procedures, concist of: (1) inventory data, (2) field survey, (3) image processing and classification, and (5) LULC change interpretation. Supervised classification of Landsat image using maximum likelihood algorithm done an overall and kappa accuracy of >90%. The classification and comparing produces nine (8) major classes, i.e.: (1) the pavement or urban area (PUA) +18.97%, (2) marginal land (ML) -57%, (3) paddy field (PF) +58.05%, (4) open water body (OWB) -0.91%, (6) Dense vegetation-Forest (DF) +4.09%, (7) Sparse vegetation-Plantation (SP) -23.56%, (8)shrubland (SL) +1.58%, and (9) Sand-Clay-Rock (SCR) -0.29%. The LULC change more marked in the rapid development areas is Jember city, then Banyuwangi city.

**Key Words**: LULC, Urban Area, Eastern Areas of East Java, Sentinel, MLC

**FR017**

# Using IFSAR DEM to Design of Site-Plan and Site-Grading in Cassava Plantation

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**Abstract.** Food reserves are a "deterrent effect" factor for defense because the strength of food reserves determines the country's survival in the face of prolonged threats and embargoes from other countries. Indonesia's food needs have increased along with the increase in the population, which has exceeded 250 million people (BPS, 2017). Therefore, the need for food will continue to grow, with a population growth of around 2% per year. This condition requires shifting from rice and wheat food to other commodities. The alternative choice is the improvement and development of cassava as a national food reserve. In planning and developing cassava land as a national food reserve, land and water resources data are needed in the targeted location. This study aims to design a site plan and site grading using IFSAR DEM. This research was conducted at the planned location of the cassava plantation by the Strategic Logistics Reserve Agency (BCLS) in Central Borneo. IFSAR DEM and RBI maps are used as a primary input. The software used for making garden designs includes InfraWorks, BIM, and Autodesk Civil 3D. The results of the site plan planning include the components of garden block design, Main Road (MR), Access Road (AR), Collection Road (CR), Buffer Zone (BZ), Farm Blok, Residential, Reservoir, Weir, Nursery, Warehouse, Factory Location, and Office Area. The garden block is planned on an area of 1325 ha. However, from a total of 1325 ha, which was designated for plantation blocks, 170.35 ha were still reduced. Site plan designing also considers the actual land use conditions and topographical constraints. The Buffer Zone is plotted because the topographic conditions are quite extreme, with a height between 120 to 150 m and a slope of more than >25%. The site grading results obtained 24 blocks of gardens with a total land area of 1227.57km$^2$ to be converted into parks.

Keywords: Food Reserves, IFSAR, Site Plan, Site Grading

**FR018**

# Identification Sensory Profile of Noni Juice Health Drink Using Quantitative Descriptive Analysis (QDA) Method

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**Abstract.** Noni juice health drink is a drink based on noni extract combined with various spices. This drink is classified as a functional drink because it has many benefits or functional for the body, such as antioxidants and anticancer. Noni-based drinks have a distinctive taste and aroma. The purpose of this study was to describe the sensory characteristics and the level of consumer preference for noni juice health drinks. The characteristics of the noni juice health drink were evaluated using QDA (Quantitative Descriptive Analysis) method. The formulations used in this test were six beverage formulations with attributes of sweet, sour, bitter, spicy, aftertaste, and overall taste parameters. The results of the QDA test showed that noni juice had different sensory characteristics with a dominant taste of sweet and sour. Based on the overall taste, the highest value is sample D with a value of 3.3 and the lowest value is in sample A with a value of 2.8..
Keywords: descriptive, drink, noni, sensory.

**FR019**

# UAV mapping for wide areas cassava food estate plantation design

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**Abstract**

In this modern era aerial photography does not use manned aircraft, but can also use unmanned aircraft or UAV (Unmanned Aerial Vechicle). The advantages of UAV is can be used in high-risk situations, without endangering human life, and in inaccessible areas. UAV generally fly at low altitudes so that the resulting photos are free from clouds. UAV mapping can produce surface topographic data with very adequate accuracy for plantation planning activities. This article reports on drone shooting strategies and drone image processing to produce detailed topographic data over a wide area. The topography data is then used for plantation cassava planning activities. The photo shoot was carried out in the Gunung Mas Regency, Central Kalimantan province. The research procedure includes: (1) preparation, (2) installation of GCP, (3) photographing, (4) processing and research analysis, (5) manufacture of photographic products. Research produces otrhophoto, DSM, DEM, DTM, and contour maps.

**Keywords:** Mapping ; Strategy ; UAV ; Topography ; planning; Cassava ; Plantation .

**FR020**

# Design and Build Compost Block Pressing Machine from Organic Waste with Hidraulic System

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**Abstract.** The problem of agricultural waste is a problem experienced by almost all people in all regions in Indonesia. The increasing population followed by the increasing need for food such as vegetables and fruits from agriculture has an impact on the amount of waste produced. Agricultural waste is generally just piled up or burned so that it can cause environmental pollution. Waste treatment is very necessary to overcome existing problems so as to increase the use value of the waste. One of the efforts to manage organic waste from agricultural products is to use it as a planting medium in the form of block compost which has biodegradable properties so that it can decompose in the soil. Pressing block compost is needed to produce a planting medium that is dense and not crumbly, so technology is needed that can produce an optimal level of compost density. This study aims to design a block compost press machine with a hydraulic system, determine the performance of a block composting machine, and determine the efficiency of using a block composting machine. The results of the design of the block compost press machine are the dimensions of the block compost hydraulic press machine with a base table size of 50 cm; width 25 cm and frame height 100 cm. A block mold with a diameter of 16 cm and a height of 30 cm and a wall thickness of 5 mm. Hydraulic size with a diameter of 5 cm, a height of 30 cm and a wall thickness of 3 mm, the motor specifications use a single phase motor powered by electricity with a horse power of 0.25 HP with a current strength of 0.5 Ampere. The motor rotation speed of 721.4 rpm with hydraulic pressure strength of 100 psi, 90 psi, and 70 psi can produce 1 compost block with the required time of 13.4 seconds, 12 seconds, and 11 seconds respectively. The hydraulic machine works by paying attention to the compatibility between the hydraulic compost block press machine and the machine operator at the standard Indonesian size with an average height of 150 cm to 180 cm.
**Keyword:** agricultural waste; block compost; pressing machine

**FR021**

# EFFECT OF COATING MATERIAL RATIO AND SPRAY DRYER INLET TEMPERATURE ON THE CHARACTERISTICS OF BUTTERFLY PEA FLOWER (Clitoria ternatea L.) EXTRACT MICROCAPSULE

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ABSTRACT Clitoria ternatea L. commonly known as butterfly pea contain a great variety of bioactive compounds and its flower petals containing anthocyanins thus it has a potential to be a natural food colorant. Butterfly pea flower is still rarely used in food products because the anthocyanins and the other bioactive compounds are unstable and sensitive to pH, temperature, or light. The aim of this research is to retain the anthocyanin compounds of butterfly pea flower extract with microencapsulation. This research is divided into two stages. In the preliminary stage, butterfly pea flower were extracted using ethanol as the solvent. In the main stage, the butterfly pea flower extract was encapsulated by using different coating material ratio (maltodextrin and Whey Protein Isolate with ratio 1:0, 1:1, 0:1) and spray dryer inlet temperature (130, 150, 170°C). The microcapsules were analyzed for its moisture content, powder recovery, anthocyanins content, encapsulation efficiency, phenolics content, solubility, particle size, and color measurement. The result showed that the yield of butterfly pea extract was 17.09%, moisture content 22.58%, anthocyanins content 939.31 mg/L, phenolics content 44.28 mg GAE/g sample, and IC50 853.74 ppm. From this research, it was found that coating material ratio and spray dryer inlet temperature affect on the characteristics of butterfly pea extract microcapsule. Butterfly pea extract microcapsule which encapsulated using Whey Protein Isolate at 150°C gave the greatest result with moisture content 4.65%, powder recovery 50.75%, anthocyanins content 50.10 mg/L, encapsulation efficiency 97.30%, phenolics content 10.65 mg GAE/g sampel, solubility 83.67%, particle size 1.22 µm, lightness L* 63.40, hue 211.25°, and antioxidant activity IC50 10.058.21 ppm.

Keywords: Microencapsulation, Clitoria ternatea L., Anthocyanins, Spray Drying

**FR024**

# Maternal Legumes and Nuts Consumption is Associated with Protein Content in Human Milk

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Human milk is the golden standard for infant nutrition which consist of complex and highly variable biofluid to nourish and protect the infant from various diseases. Proteins hold a significant role in the biological function of human milk. Meanwhile, the association of maternal consumption with crude protein in human milk was not well explored. In the present research, a cross-sectional study was conducted on 194 healthy exclusively lactating women from eight different cities to obtain Quantitative Frequently Food Questionnaire (FFQ) and human milk samples (NCT03675204). Maternal consumption was recorded and then clustered into cereals, potatoes, sweet potatoes, leaf vegetables, fruit, other types of vegetables, legumes, nuts, eggs, meats, dairy, and seafood consumption a day before the milk collection. The samples were analyzed using the human milk analyzer for obtaining the crude protein concentration per 100 ml samples. The association between the maternal diet and the protein content was assessed statistically by using t-test to examine the effect of partial variables and F-test to assess the effect of variables simultaneously with 5% significance level. The result showed the average daily maternal consumption of cereals, potatoes, sweet potatoes, leaf vegetables, fruits, other leaf vegetables, legumes, nuts, eggs, meats, dairy products, and seafood were 66.63, 66.98, 46.76, 116.95, 111.36, 152.97, 79.50, 39.95,70.99, 94.87, 174.20, and 94.18 g, consecutively. The average protein content of human milk was 1.02 g/100 ml. Based on the statistics, there was a significant association between legumes, nuts, and eggs consumption with the concentration of crude protein which implies these foods consumption could affect protein content in human milk. This result could be a good recommendation for lactating women to increase local high sources of protein consumption, such as nuts to improve protein content in human milk.

**Keywords**: **maternal consumption, nuts, legumes, human milk, protein content**

**FR026**

# Temperature and Humidity Control using Nextion 3.2 HMI in The Natural Greenhouse

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**Abstract.** Maintaining stable temperature and humidity conditions is a crucial part of the plant growth stage. Ignoring the urgency of controlling this parameter causes plant growth to be not optimal. This research was conducted to monitor the temperature and humidity inside and outside the greenhouse and to create a temperature and humidity control system. The research method was experimental by observing red spinach *(Amaranthus tricolor L*) plants with a combination of planting media (cocopeat, husk charcoal, and compost). The air conditioning system built applies the IoT (Internet of Things) concept, which utilizes internet connectivity for interaction between the microcontroller and the web system by using Nextion 3.2 HMI as a medium for monitoring and controlling system parameters for temperature and humidity thresholds. Temperature and humidity conditions in the natural greenhouse can be monitored properly by obtaining the highest average temperature value for 14 days, which is 33.5°C and the lowest average temperature is 25.1°C , while the highest humidity value is 91.06% and the lowest is 72%. The temperature and humidity outside the greenhouse can also be monitored with an AWS (Automatic Weather Station) that is functioning properly. The average outdoor air temperature has increased starting at 06.00 am, from the lowest temperature at 22.3°C to the highest point of 33.6°C at noon around 12.00 noon. The temperature and humidity data retrieval using the DHT22 sensor displays on the Nextion 3.2 HMI screen where the data has been successfully set as desired. From the results of the data analysis, the MAPE (Mean Absolute Percentage Error) values obtained for the temperature and humidity sensors are 4.81% and 8.37%, respectively, which means that the interpretation of the MAPE value on the accuracy of the prediction model is very accurate (<10%).
Keywords: humidity, Internet of Things,  Nextion 3.2 HMI, temperature

**FR027**

# *Physical Characteristic* Analysis *of Shells Coconut Briquette*

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## ABSTRACT

Briquettes can be used as an alternative fuel to replace fuel oil. The method of making briquettes can be done in several ways, one of which is using the hydraulic system compression force method. The physical characteristics resulting from this method have advantages and disadvantages. Therefore, this study aims to analyses the physical characteristics of coconut shell briquettes using tapioca flour as an adhesive. The process of making briquettes was done by compression force. Parameters observed were hardness and briquette flame. The results showed that the higher the compression force, the higher the hardness of the briquettes and the flame was also very good. The best coconut shell briquettes are found in a compression force of 12 kg/cm$^2$ with a hardness of 27.7 kg/cm$^2$ and a flame of 112.61 minutes. While the worst quality was obtained at a compression force of 4 kg/cm$^2$ with a hardness of 16.5 kg/cm$^2$ and a flame of 111.34 minutes. The development of the method of making briquettes still needs to be developed as a cheap alternative energy source.

**Keywords**: briquettes, coconut shell, compression force, and flame

**FR030**

**Characteristics of Corn *(Zea Mays)* Seeds Drying Using a Vertical Rack-Type Dryer**

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**ABSTRACT**

Corn is one of the foodstuffs that are needed by humans and animals. In trading, it must meet the quality requirements for moisture content of 14% so that it can last a long time and not be damaged due to the growth of fungus on the foodstuffs. So that, it is necessary to have a dryer machine that can help the drying process faster and cleaner. Moisture content is one of the physical properties of materials that indicate the amount of water contained. The moisture content of corn kernels is affected by drying and storage process. In the process of making materials, it is necessary to know what percentage of water content. In this research, the variables observed were temperature, relative humidity, and moisture content during drying process. The material used was corn kernels. The dryer machine was vertical type with 11 racks inside. The maximum temperature on the dryer machine was set on 40°C. The results showed that the drying period was 3 hours in order to get moisture content of seed around 14% wb. The actual value for temperature was 37°C on rack 11 and 33°C on rack 1. The moisture content (wb) decreased from 20.10% before dried to 13.57% after dried. The relative humidity value was fluctuated from 55% to 56%. The drying rate at for first 60 minutes was 5.96%, then at 120 minutes was 2.08% and at 180 minutes was 1.40%. To sum up, vertical dryer machine needs 3 hours to dry corn seeds to get moisture content that safe during storage.

**Key Words:** Corn Seeds, vertical dryer machine, temperature, relative humidity, moisture content

**FR031**

## Characteristics of Red Beans (*Phaseolus vulgaris* L.) Seeds Drying Using a Vertical Rack-Type Dryer

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**ABSTRACT**

Damage to red bean seeds during harvest and storage is influenced by the water content in the bean. To reduce the moisture content of the seeds is the drying process. The drying method using a rack-type drying machine is able to optimize the drying process, especially for seeds because the temperature can be set as the need of the seeds. The purpose of this study was to determine the effect of a rack-type drying machine on the drying characteristics of red bean seeds on moisture content, drying rate and differences in temperature, relative humidity and drying time. The temperature was set on 35°C. Actual temperature and relative humidity was measure automatically every minute in each rack from data logger. Moisture content was measure every hour until reach condition that safe for storage. The result showed the drying characteristics of red bean seeds and changes in temperature and humidity had different values on each rack. After drying for 9 hours, the moisture content before dried of red bean seeds was 32.30%. After dried, the moisture content of seed decreased in range from 13.20%-15.02%. The drying rate for 9 hours has a fluctuating value and tends to decrease on each shelf. The highest drying rate value occurred at the 1st hour while the lowest drying rate value occurred at the 8th hour. Measurements of temperature and humidity on each rack have different values. The highest temperature is on rack 11 with an average of 36°C while the lowest temperature is on rack 2 with an average of 31°C. The highest humidity is on rack 2 and 6 with an average value of 68%, while the lowest humidity is on rack 11 with an average value of 51%.

**Key Words:** Red Beans, vertical dryer machine, temperature, relative humidity, moisture content

**FR032**

# Partial Substitution with Heat-Moisture Treated Sweet Potato (Ipomoea Batatas L.) Flour To Wheat Flour Affecting Physicochemical and Organoleptic Characteristics of Pan Bread

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Abstract. Bread products including pan bread are widespread as staple food. The main raw material in bread making is wheat flour. However, in Indonesia, wheat flour must be imported and the demand increases every year. To reduce wheat flour dependency, partial substitution of wheat flour with a local crop i.e. sweet potato was studied in this research. However, due to poor properties of native sweet potato flour for bread making, a modification was needed. This research objective was to determine effect of Heat-Moisture Treatment (HMT) temperature and time on swelling power, solubility, and lightness of sweet potato flour, then to select best treatment, and to determine effect of substitution ratio on physicochemical and organoleptic characteristics of pan bread prepared with a straight dough method. Sweet potato flour was modified (61, 69, and 77 °C; 3, 6, and 9 h). Substitution ratios (wheat flour : modified sweet potato flour) in the making of pan bread were 90:10, 85:15, 80:20, 75:25, and 70:30. Results showed sweet potato flour modified at 77°C for 3 h had the highest swelling power (13.23±0.27 g/g) and was used for pan-bread making. Pan bread with a ratio of 90:10 exhibited similar protein content and higher volume than that of the control; whereas a ratio 85:15 showed similar protein content and bread volume to the control's. Overall acceptance of these pan breads (90:10 and 85:15) was only slightly less than that of the control. Thus, pan breads with ratios of 90:10 and 85:15 was selected as best formulated pan bread with moisture, fat, protein, ash, and carbohydrate content of 37.74±0.16%, 8.83±0.08%, 14.83±0.04%, 1.51±0.07%, 37.09±0.04%, and 38.04±0.23%, 10.96±0.64%, 14.33±0.63%, 1.54±0.07%, and 35.13±0.07%, respectively. Taken together, partial substitution with 10 and 15% of HMT-modified sweet potato flour to replace wheat flour was proven exhibiting to some extent better pan bread characteristics.

Keywords: pan-bread, heat-moisture-treatment, sweet-potato-flour

**FR033**

# Application of Fruit-based Food Ingredient from Antidesma bunius (L.) Spreng. in Processed Food

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**Abstract.** The manufacture of processed food requires various food ingredients to obtain the desired nutritional composition and certain technological effects. Food ingredients include all edible components required in the formulation of processed food. In Indonesia, natural food ingredients based on local raw materials have not been widely developed and produced in industrial scale. This study aims to apply non-food additives (FAs) natural food ingredients based on buni fruit (Antidesma bunius (L.) Spreng.) with coloring impact in various processed foods. The research begun with preparation of buni powder with specific formula and method (unpublished). The buni powder was then applied for the production of hard candy, jelly, and syrup, which represent solid, semi-solid, and liquid food products. In the final stage, organoleptic tests were carried out on each of these food products to study the effect of dried buni powder on consumer preferences. The colorant impact of dried buni powder in processed food products depends on the pH of the product as indicated by the ΔE parameter on the chromameter. The test results showed a significant difference in the value of ΔE before and after the addition of the powder. The results of organoleptic test showed that the addition of dry buni powder to the processed food samples of hard candy, jelly, and syrup was tasted by the panelists. Based on the results, it can be concluded that buni juice can be processed into food ingredients for processed foods. The preparation of food ingredients from buni fruit juice can provide an effective and stable coloring effect when applied to processed foods. The results of this study would have a positive impact in the form of product added value and the availability of natural food ingredients based on local raw materials that meet the aspects of safety, benefit, and quality and hence can be applied for the production process of various processed foods.

Key words: Antidesma bunius, ingredient, processed food

**FR034**

# Optimized Digital Webcam with Hungry Roach Infestation Optimization to Monitor the Drying Process of Cassava Chips

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**Abstract.** This study utilizes Logitec HD webcam C270 as a computer vison-based precision monitoring system to optimize the performance of cassava chips drying machines. Cassava chips processed from optimal drying is later utilized as raw material for quality modified cassava flour (MOCAF). The purpose of this study is to optimize the selection of textural features (TFs) in computer vision to predict the water content of cassava chips during the drying process by applying a combination of optimization methods, commonly referred as hungry roach infestation optimization (HRIO) algorithm and modeling methods, which is artificial neural network (ANN). Multi-objective optimization (MOO) was performed with two objectives, by maximizing the accuracy of the predicted water content of cassava chips and by minimizing the number of feature subset of a total of 260 TFs. The test results indicate that the best feature subset depict the 6 TFs such as grey energy, hue energy, red entropy, saturation$_{(HSV)}$ contrast, green homogeneity, and grey correlation. The best feature subset has been tested as ANN input to predict the water content of cassava chips during the drying process (presenting the expected results), marked with the achievement of $R^2$ values between real data and predictive data of 0.98. The results of the measurement of mean square error (MSE) on the training data are 0.000056 and the MSE value in the validation data of 0.000098.

Keywords: cassava chips, computer vison, hungry roach infestation optimization

**FR035**

# PATHOGENIC BACTERIA CONTAMINATION AND HAZARDOUS CHEMICALS IN TRADITIONAL SHRIMP PASTE

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**Abstrak**

Shrimp paste is a food additive that functions as a flavoring which is generally made traditionally by coastal communities using raw materials of shrimp or fish with the addition of salt. Traditional processing is usually carried out with uncontrolled sanitation so as to allow shrimp paste to have the opportunity to contain unwanted bacteria and chemicals. Therefore, this study aims to determine the opportunities for pathogenic bacteria and chemicals that contaminate traditional shrimp paste. The shrimp paste samples were obtained from 6 producers on the island of Lombok and 2 producers on the island of Sumbawa. This research was conducted using a Randomized Block Design (RAK). Parameters tested were microbial contamination including total microbes, pathogenic bacteria (*Coliform, Escherichia coli, Salmonella thyposa, Vibrio cholera and Staphylococcus aureus*) and hazardous chemicals (formalin, rhodamine and borax). The results showed that microbial/bacterial contamination was found in most of the test samples. Three producers produce shrimp paste that meets the quality requirements of *E.coli* and 5 producers produce shrimp paste with an amount exceeding the SNI standard of 9.2 >1100 APM (sanitation has not been met). Salmonella was found in all the test samples except for the Sasaq Maiq shrimp paste while *Vibrio cholerae* was not found in the Teluk Jor shrimp paste and the Labu Bontong shrimp paste. Teluk Jor Shrimp paste and Udang Lembar did not contain *Staphylococcus aureus*. Formalin was found in Jero Acan shrimp paste, Jotang shrimp paste and Labu Bontong. In addition, there was no indication of the use of Rhodamine and Borax in the shrimp paste samples tested.

**Keywords:** Shrimp paste, Total Mikroba, bakteri patogen, formalin, borax

**FR036**

# Application of Hygiene and Sanitation in The Hairtail Fish Freezing Industry

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**Abstract.** Food hygiene is carried out by controlling location, equipment, personnel, and food products factors that can cause health problems. One of the foodstuffs that quickly deteriorate so that it requires strict hygiene control is Hairtail fish. The "X" fish processing industry performs freezing to prevent spoilage of Hairtail fish caught by fishermen around the industry. Hairtail fish is easy to decompose because of its high water and protein content, and the impact of natural circumstances. Frozen Hairtail fish is used to meet export demand so hygiene and sanitation in the processing are needed to prevent fish poisoning. The purpose of the study was to obtain an overview of the hygiene and sanitation application to deliver suggestions for efforts to improve hygiene and sanitation in the industry. The descriptive research method was carried out through surveys, interviews, and observations. The results showed that several variables did not meet the principles of hygiene and sanitation, especially for facilities. Employees do not have good knowledge and have not optimally applied the principles of hygiene and sanitation. As a recommendation, efforts are needed to complete the infrastructure and increase employee understanding, which will improve the quality of frozen Hairtail fish.

Keywords: Hygiene and sanitation, freezing, Hairtail fish

**FR037**

# Inhibition of ACCO (1-aminocyclopropane 1-carboxylic acid oxidase ) Activity of Mango by Modified Atmosphere Storage

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## ABSTRACT

Inhibition of ACC Oxidase Activity of Mango by Modified Atmosphere Storage is aimed to extend the storage life were carried out at Food Technology Laboratory, University of Mataram from by using Completely Randomized Design and continued with Least Significant Different at five percent significance level. Mangoes were stored at Polyethylene (PE) bags; PE + $KMnO_4$; Polypropylene bags (PP); PP + $KMnO_4$ and unpacked (Control) for three weeks. The physical properties of fruit such as weight loss and decay percentage were determined, while physiological properties such as the rate of respiration, ethylene production including $ACC_O$ activity. Inactivation of $ACC_O$ occurred to almost half-time of its activity in mango stored at MAS as compared to unpacked mango. Therefore, paralleled the rate of respiration and production of ethylene at MAS leads to extend the storage life of mangoes. Weight loss and decay percentage of mango kept in MAS for 3 weeks were lower than unpacked.
Key word: $ACC_O$, KMnO4, Mangoes, MAS. Polyethylene and Polypropylene.

**FR040**

# GREEN BEAN DECAFFEINATION OF ROBUSTA COFFEE (*Coffea canephora*) ORIGINATED FROM RINJANI LOMBOK USING PINEAPPLE EXTRACT (*Ananas comosus*)

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**Abstract.** Market demand for naturally decaffeinated coffee steadily increasing in the past few years. This study aims to determine the best immersion concentration of pineapple extract (*Ananas comosus*) to reduce caffeine in robusta coffee beans (*Coffea canephora*) originating from the Rinjani Lombok Geopark Area. The design used in this study was a one-factor Randomized Block Design (RBD) with six treatments which were repeated three times. The treatments consisted of addition 0%; 20%; 40%; 60%; 80% Pineapple extract into immersion method decaffeination process. Parameters observed were Caffeine Levels, Protein Levels, Total Titrated Acid Levels, Water Content, Ash Content, Organoleptic Tests (Scoring and Hedonic), Taste, and Aroma. Observational data were tested by analysis of variance at 5% and further tested using the Duncan Multiple Range Test (DMRT) at a significant level of 5%. The results showed that immersion using pineapple extract significantly affected caffeine, protein, ash, taste, organoleptic (scoring scale), and aroma (scoring and hedonic scale). However, the immersion did not significantly affect total titrated acid levels, water content, and organoleptic taste (hedonic scale). The best treatment was the addition of 40% pineapple concentration with the characteristics of 0.22% caffeine content, 12.86% protein content, 0.76% total titrated acid content, 9.21% water content, and 3.56% ash content. The sensory resulted in a slightly bitter taste and strong coffee aroma favored by panelists.

Keywords: Decaffeination, robusta coffee, pineapple (Ananas comocus)

**FR041**

# Assessment of Land Use and Land Cover Change in East Java from 1972 to 2021

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**Abstract.** This study investigates land use, and land cover (LULC) changes in East Java province, in Indonesia, during the last 50 years (from 1972 to 2021). The changes are analysed by comparing four maps interpreted from Landsat Imageries (1972, 1997, 2013, and 2021). The main research procedures consist of: (1) data inventory, (2) field survey, (3) image processing and classification, and (4) LULC change interpretation. All the images were collected and pre-processed using the Google Earth Engine platform. Supervised classification of Landsat image was processed using the maximum likelihood algorithm on QGIS. The results showed an Overall and Kappa accuracy ranging from 76% to 95%. The classification produces eight (8) classes, i.e.: (1) the pavement or urban area (PUA), (2) heterogeneous agricultural land (HAL), (3) Bare soil (BS), (4) paddy field (PF), (5) open water body (OWB), (6) vegetation (VG), (7) shrubland (SL), (8) Wetlands (WL). The results showed increasing areas of PUA by 370.27%, PF by 109.28%, OWB by 330.25%, VG by 66.46%, and WL by 202.75%. Consequently, HAL, BS, and SL decreased by -47.36%, -89.44%, and -92.31%, respectively. Furthermore, three regency areas are explored in more detail to study the drivers that may cause the LULC changes (e.g., infrastructure and industrial development, agricultural land expansion, urbanization, and sub-urbanization). The study has also shown the Landsat data series (MSS, ETM, OLI) capability to track the significant LULC changes in this region.

Keywords: Classification, LULC, Landsat.

**FR042**

# Development of Floating Rice Cultivation Technology in Community-Based Peat Swamp Land in East Kalimantan

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Abstract. Peat swamp land is a land resource that can be a source of agricultural production growth with reliable cultivation technology. The development of peat swamp land agriculture has a great opportunity to increase food security that comes from local potential in accordance with one of the goals of the SDGs (Sustainable Development Goals). One of the technological innovations of cultivation on peat swamp land is by applying floating rice cultivation. This study aims to determine the success rate of implementing floating rice cultivation technology on peat swamp land in East Kalimantan. The method used is participatory action research with the community in one of the villages in East Kalimantan, namely Minta Village, Penyinggahan District, West Kutai Regency. Floating rice was applied using a 20 x 20 meter bamboo raft with a land use efficiency of 80% in one hectare. The results showed that rice plants could be harvested at the age of 75 days with a grain production of 6 tons/ha or an average productivity of 30 grams/clump.

Keywords: Floating rice, innovation, peat swamp land.

**FR043**

# Value Added Analysis and Development Strategy of Canned Traditional Food Sayur Lilin (*Saccharum edule*)

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## ABSTRACT

Sayur lilin is a traditional food made from sayur lilin (Saccharum edule) and coconut soup. The development of canned sayur lilin is aimed for extending the shelf life, increasing the sale value, and expanding the market of sayur lilin. This study was aimed to analyze the value added and determinded the development strategy of canned sayur lilin business. Analysis methods used in this study were consisted of value added analysis by Hayami, internal factor evaluation (IFE) matrix, external factor evaluation (EFE) matrix, internal-external (IE) matrix, and SWOT analysis. The result of value added analysis showed value added ratio of canned sayur lilin was 70,57%. The score of IFE matrix was 2,925 (average) and the score of EFE matrix was 3,000 (high). The combination of IFE and EFE in IE matrix showed canned sayur lilin was in quadrant II. Quadrant II is described as grow and build. The suitable development strategy for canned sayur lilin business is market penetration and development, also product development. Based on added value and SWOT analysis, canned sayur lilin is potential to be developed. Strategies that can be applied are recipe modification, product socialization, cooperation with local government and related parties, and social media promotion.

Key words: sayur lilin, canned food, added value analysis, IFE matrix, EFE matrix

**FR044**

# Utilization of Yellow Sweet Potato and Telang Flower Juice to Increase Antioxidants of Cookies

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The purpose of this study was to determine the effect of adding yellow sweet potato and telang flower juice on antioxidants and other nutrients in cookies. The method used was an experimental method with experiments in the laboratory. The design used was a single factor with completely randomized design with treatment P = wheat flour: yellow sweet potato flour: telang flower extract, namely P1 (100:0:0), P2 (50:50:0), P3 (50:50: 2), P4 (50:50:4), P5 (50:50:6), and P6 (50:50:8) with 3 repetitions. Parameters observed were chemical properties (moisture content, antioxidant activity), physical properties (fracture strength and color) and sensory properties (color, taste, and texture). Observational data were analyzed using Costat. Significant data tested with Honest Significant Difference (HSD) at a 5% significance level. The results showed that the addition of telang flower juice in the manufacture of cookies resulted in a significant effect on moisture content, antioxidant activity, fracture power, color (Hue and lightness), organoleptic except taste (hedonic). The best treatment in making cookies was the addition of 2% telang flower juice with a moisture content of 5.11%; antioxidant activity 95.51%; fracture strength 28.5 N; lightness 56.38; hue 64.37; and organoleptic properties that are still acceptable to the panelists.

**Keywords: cookies, telang flower juice, yellow sweet potato**

**FR045**

## The design and performance of maggot harvester

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**Abstract**. Organic waste from porang flour production in the form of calcium oxalate dust from Pilot Plant Faculty of Agricultural Technology, Brawijaya University reaches 400-600 kg per ton porang chips milling. If it is combined with household and restaurant waste in the city of Malang which can reach 689 tons per day in the form of organic matter can be decomposed by using Black Soldier Flies (BSF) maggot. Maggot is a source of protein that can be used as fish, poultry and animal feed which can be processed into dry maggot or maggot flour. The high cost of imported maggot flour processing machines with a large capacity is inappropriate for the small-scale industry, the absence of maggot harvesting tools also makes the work done manually and takes time. Thus, to facilitate the process of harvesting, drying and making maggot flour, it is necessary to design a machine to support these activities so that the results are able to produce added value for high protein maggot flour. This study aims to design a maggot harvester machine and test its performance for the small to middle scale industry. The maggot harvester machine was successfully designed and built. The performance of the maggot harvester machine can successfully harvest the maggot and also differentiate between maggot, organic fine compos, and organic coarse compos.
Keywords: maggot harvester, porang waste, maggot

**FR046**

# Pectin Extraction of Red Dragon Fruit Peels (Hylocereus polyrhizus) and Its Potency for Bioplastic Production

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Bioplastic or degradable plastic is an eco-friendly packaging and an alternative to reduce the impact of plastic packaging waste pollution. The by-products of fruit processing, such as dragon fruit peels, which are approximately 30-35% of the fruit, are often discarded into the environment and can cause organic pollution . Meanwhile, dragon fruit peels (Hylocereus polyrhizus) contain pectin which can serve as the raw material for making bioplastic. The pectin content of dragon fruit peel is relatively higher than other fruit peels, which makes it potential for extraction. This research aimed to determine the optimum material:solvent ratio and the duration of extraction by using MicrowaveAssisted Extraction (MAE), to get the best yield and viscosity of level of pectin. This study used Response Surface Methodology with Central Composite Design. The results showed that the optimum ratio of material:solvent used for extraction was 1:40.60 g/mL and time of extraction was 14 minutes 27 seconds, which resulted in 28.056+0.02 and 39.667+0.47 cP of pectin yield and pectin viscosity level, respectively. Pectin extracted was characterized as follows: moisture content (9.209+0.24%); equivalent weight (7237.44+0.05); methoxyl content (1,321+0.04%); galacturonic acid content (39.722+0.94%); and esterification level (18.874+0.15%). The characterized pectin was categorized as low methoxyl pectin according to the International Pectin Producers Association (IPPA) standard.

Keywords: bioplastic, red dragon fruit peel, extraction, MAE (Microwave-Assisted Extraction), pectin

**FR047**

# Detection of Sugar Apple (Annona squamosa L.) Ripeness Based on Physical and Chemical Properties Using the KNearest Neighbor (k-NN) and Random Forest Algorithm

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Abstract. West Nusa Tenggara is one of the very high sugar apples producing regions every year. Post-harvest handling of sugar apples or srikaya fruits presents several challenges, one of which is judging the quality of the fruit by its ripeness. A lot of research has been done on fruit classification using one or two parameters using machine learning. Physical and chemical properties such as aroma, moisture content, total dissolved solids, texture, and weight loss are typically indicators for judging fruit ripeness. The purpose of this study is to use the k-Nearest Neighbor (k-NN) and random forest algorithms to determine the ripeness of sugar apples based on their physical and chemical properties and to measure the accuracy of the algorithms. The methods used in this study are k-NN classification methods and random forests, and their performance is measured using a confusion matrix. The parameters observed were physical properties (weight loss and texture) and chemical properties (moisture content, total dissolved solids, and gas content) and the number of test samples varied from 20%, 30% and 40%. Results were achieved to determine the ripeness of sugar apples, and the random forest method achieved 100% of accuracy for various number of test samples. On the other hand, the accuracy of the k-NN method decreases as the number of test samples increases i.e. 100%, 100%, 50% for each variant of the test sample, respectively. Therefore, it can be concluded that determining the ripeness of sugar apples by random forest method is better.

Keywords: Detection, Physical and Chemical Properties, Ripeness Based, Sugar Apple

**FR051**

# Responsibility of Red Chili in The Production Center of Yogyakarta Indonesia

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**Abstract.** The objectives of this research were to describe the red chili supply chain and to analyze the responsibility of red chili supply chain in production center of Yogyakarta Indonesia. This research was conducted in Panjatan Regency as the center of chili production and auction market. The sampling technique was purposive sampling for farmers and snowball sampling for non-farmers. Data collection was carried out using surveys and interviews with 89 respondents. The red chili supply chain was analyzed using descriptive analysis, while the responsibility of the supply chain was analyzed using the Performance Measuring System (PMS) which consists of fill rate, product lateness, lead time, and customer complaints. The results showed that the red chili supply chain consists of two chains. The first chain consisting of five actors, namely farmers, auction market, traders, retailers, and consumers. The second chain consisting of four actors, namely farmers, collecting traders, retailers, and consumers. The measured indicators showed that the first chain is the most responsive compared to the second chain.

Keywords : Performance measurement system, red chili, responsibility, supply chain

**FR053**

# Application of the Natural Antimicrobial Kayu purut (*Dysoxylum parasiticum*) to Delay Palm Sap (*Arenga pinnata* sap) Decay

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**Abstract.** Brown sugar has frequently been produced using palm sap (*Arenga pinnata* sap) as the primary raw material. In this study, the *punic* (first time the branch tapped) of the palm tree was tapped in order to determine the efficacy of *kayu purut* (*Dysoxylum parasiticum*) stems as a natural preservative (antimicrobial). The research procedure involved pasteurizing palm sap at a temperature of 75 ± 3 ℃ for 10 ± 2 minutes, followed by storage in two conditions: room temperature (25 ± 3 °C) and cold temperature (10 ± 3 °C), both of which had antimicrobials added. The results indicate that the quality of sap could be preserved for a longer period of time by using 0.92% (w/v) *kayu purut* during the tapping process and storing it at low temperatures following pasteurization.

Keywords: Arenga pinnata sap , Dysoxylum parasiticum)

**FR055**

# Consumer Acceptance of Herbal Tea Brewing Based on Ratio of Cascara Dayak Onion and its Brewing Time

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## ABSTRACT

The post-covid-19 pandemic shifted public perception to a healthier life style, such as consumption of herbal tea on daily basis. Herbal tea refers to an infusion of grounded dried parts of plant, either is singular or mixed materials which are reported to contains a beneficial compounds that improve human health, i.e. mixture of cascara and dayak onions. Cascara is reported to have the antioxidant compounds and available in abundant quality. On the other hand, dayak onion previously acknowledged as medicinal plants, high in price but it has low acceptance level. Therefore, here we demonstrated how well the consumer acceptance to the infusion of cascara dayak onion herbal tea using the simple average weighed (SAW) method. The herbal tea is packed in instant tea bag with seven different ratios, such as 100:0; 80:20; 60:40: 50:50; 40:60; 20:80 and 0:100, then it was brewed for 5 and 8.5 minutes. 30 respondents who are a regular herbal tea consumers are interviewed and sensorically tested their acceptance to color, aroma, flavour and aftertaste of our herbal tea using 1 to 5 hedonic scale (very dislike to very like). Most of respondents are women (83%) which age varied within 35 to 55 years old, consumed a herbal tea on daily basis. Their acceptance to color, aroma and flavor of herbal tea infusion are ranged within dislike to just right with an average of just right for all sensory properties. By using SAW, respondents claimed that flavour of herbal infusion is the important sensory properties with value 31,67%, over others sensory properties. By calculating SAW matrix, herbal tea with ratio 60% cascara : 40% dayak onion and infused for 5 minutes is considered as best treatment with optimum score is 0,97. However further research is required to acknowledge all quality parameter of produced herbal tea.

**Keywords:** cascara, cupping tea, dayak onion, herbal tea, infusion, optimisation, SAW

**FR056**

# The Potential of Migratory Locusts (*Locusta migratoria* Meyen) As An Alternative Source of Protein, Amino Acids, And Other Important Bioactive Compounds

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The migratory locust (*Locusta migratoria* Meyen) is an edible insect more commonly known as a destructive pest. In recent years, locust insects have been reported to have destroyed rice and maize crops on the island of Sumba. In Indonesia, locusts have not yet been used as a food ingredient. The purpose of this study was to determine the nutritional content and other bioactive components of locusts so that they could be used effectively. Nymphs were obtained from Palanggai village, Pahunga Lodu sub-district, while imagoes were obtained from Watupuda village, Umalulu sub-district, East Sumba district. Samples of nymphs and imago locusts were obtained from the villages of Palanggai and Watupuda, East Sumba Regency. Proximate analysis (protein, fat, ash, carbohydrates, and energy) using the SNI 01-2891-1992 method. Analyses of amino acids were conducted using UPLC. Chitin is produced through demineralization and deproteinization processes and then deacetylated to produce chitosan. The results showed that the protein content of locusts was high, ranging from 63.86 to 76.85%, higher than the protein content of beef. It also contains amino acids, mainly seven types of essential amino acids. Imago contained chitin from 8.79 to 12.05% and chitosan from 59.3% to 71.26% by weight of chitin. As a result of this study, locust offers the possibility of being used for nutritional purposes, particularly for protein and amino acids, in overcoming nutritional issues. Additionally, migratory locusts are rich in chitin and chitosan, which are useful in agriculture and health industries.

Keywords: amino acids, chitin, chitosan, locust, protein

**FR057**

# Energy Analysis on Continue and Discontinue Drying Process of Corn (Zea Mays) Using Vertical Dryer

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**Abstract.** Corn is one of the agricultural products that requires drying to extend its shelf life. Until now, the technique of drying corn with a drying floor in fact still causes problems for dried corn. The purpose of this study is to analyze the heat energy in the drying process of corn kernels (Zea Mays) using a vertical dryer. In the test process, it was carried out with 2 drying, continuing, and discontinue treatments. The results obtained from the 50 temperature 55 continuous treatment obtained total incoming energy of 206411.51 kJ, total useful energy of 111062 kJ with a drying efficiency of 53.81% while for discontinue treatment under the same conditions, the total incoming energy was 197600.95 kJ, the energy utilized was 96314.6 kJ with an efficiency of 48.74%

Keywords: energy, corn, efficiency, vertical dryer continue

**FR059**

## Pathogens Associated with Potato Plants in Fatumnasi District

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Abstrack. The increasing demand for potatoes provides a golden opportunity for increasing potato production in Indonesia, both by farmers and private companies. Potato is one of the essential commodities in Indonesia that has the potential and prospects to support food diversification programs to realize sustainable food security. One of the obstacles to potato production is the attack of pathogens that can cause a decrease in productivity. This study aims to identify pathogens in potato plants in Fatumnasi District, South Central Timor Regency. This research was conducted in June-September 2022. A sampling of potato plants was carried out in Kuanoel Village and Fatumnasi Village in Fatumnasi District. Identification of pathogens was carried out at the Plant Disease Laboratory, Faculty of Agriculture, Universitas Nusa Cendana (Faperta Undana). The results of this study obtained five pathogens, namely Alternaria solani, Colletotrichum sp., Curvularia sp., Fusarium oxysporum, and Phytophthora infestans. Alternaria solani causes alternaria leaf spot disease or dry spot disease, which is the appearance of small spots on the lower leaves, and then grows to a diameter of ± 15 mm. Colletotrichum sp. causes the leaves to turn yellow and curl, then wilt and dry. Curvularia sp. causes yellow spot disease on the leaves; over time, it becomes dry spots that turn gray-brown, and the leaves shrivel up. Fusarium oxysporum causes fusarium wilt disease, which causes plants to wilt starting from the lower leaves. Phytophthora infestans causes leaf blight. Symptoms on the leaves are blight or large gray spots with a slightly dark and wet center. Symptoms of attack on the root neck and roots are black rot. Attacks on tubers are in the form of wet rot of tubers that are gray or black. Keywords: Potato, Alternaria solani, Colletotrichum sp., Curvularia sp., Fusarium oxysporum, and Phytophthora infestans.

Keywords: Potato, Alternaria solani, Colletotrichum sp., Curvularia sp., Fusarium oxysporum, and Phytophthora infestans.

**FR062**

# Pathogens Associated with the Declining of Nuabosi Cassava in Ende, East Nusa Tenggara

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Nuabosi cassava, the pride of the people of Ende Regency, East Nusa Tenggara provice, is currently being attacked by pathogens that cause tuber rot. The pathogen attack has spread to about 50 ha on community-owned plantations, causing many losses. The cause of the disease and the environmental factors that support the occurrence of this disease are not yet known. Therefore, identifying pathogens causing tuber rot in Nuabosi cassava plants must be done to take appropriate control measures immediately. The purpose of this study was to characterize the diseases in Nuabosi cassava in Ende Regency. Samples of diseased leaves and tubers were taken and put into labeled plastic bags and stored in a cool box to be immediately taken to the laboratory for further processing. Samples were cut into ± 2 mm2 and surface sterilized with sodium hypochlorite and 70% alcohol for one minute each, then rinsed with sterile water and allowed to dry on sterile tissue paper. The pieces of tissues were then placed on the surface of PDA media plus antibiotics in separate Petri dishes. Fungi growing from pieces of leaves and roots on PDA media were observed daily and subcultured to obtain pure cultures for macroscopic and microscopic identification. The pathogens isolated from nuabosi cassava were Alternaria sp., Cercospora chenopodii, Colletotrichum sp., Geotrichum sp., Fusarium oxysporum, Neoscytalidium dimidiatum, and Phytophthora sp. Alternaria sp. was isolated from leaves and tubers, while Cercospora chenopodii and Colletotrichum sp. were found from symptomatic necrotic leaves. Geotrichum sp., Fusarium oxysporum, Neoscytalidium dimidiatum, and Phytophthora sp. were found in diseased tubers. These preliminary findings also indicate that the cause of death of nuabosi cassava is associated with many pathogens. Further research is being focused on the biological control of Fusarium oxysporum and Phytophthora using the indigenous Trichoderma spp.

Keywords: Nuabosi cassava, Fusarium oxysporum, Phytophthora sp.

**FR063**

# The Quality of Liquid Sugar from Sorghum Grown in East Lombok Regency, West Nusa Tenggara Province with The Addition of Natural Complementary Ingredients

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Abstract. Testing the liquid sugar content is very important to study the quality of the liquid sugar which comes from the sorghum plant located in Jerowaru District, East Lombok Regency in the province of West Nusa Tenggara, Indonesia. In this study, the nutritional value of post-treatment sugar was analyzed in the form of adding Moringa juice and yogurt. The content of reducing sugar obtained through the Luff Schoorl method. Water content analysis was carried out using the gravimetric method. Protein content analysis was carried out using the Kjeldahl method. Analysis of vitamin C levels using the Titrimetric method. The results showed that there was a change in the composition of Crude Protein, Vitamin C and Total Sugar based on dry matter. The total protein and sugar content was increased through the addition of moringa and yogurt. However, the vitamin C content decreased in the treatment. Crude protein and total sugar content obtained by the addition of Moringa juice and yogurt were 2.69% and 105.77%, respectively. Regarding the content of vitamin C, the highest vitamin C was found in sugar derived from pure sorghum, which was 469.24 mg/100 g.

Keywords: Liquid Sugar, Sorgum, Quality, East Lombok Regency, Natural Complementary Ingredients

**FR064**

# PHYSICAL AND SENSORY QUALITY OF CANNED "RARANG" CHICKEN UNDER STERILIZATION TIME DIFFERENCE

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**Abstract**
Rarang chicken is one of the main culinary products of West Nusa Tenggara. Canning is the choice of processing technology to extend the shelf life of products with stable quality and expand market reach. The heat adequacy for canning rarang chicken has been determined, but tests on changes in texture and a number of sensory qualities have not been carried out. Therefore, this study aimed to determine the physical and sensory quality of canned Rarang chicken which was sterilized for different lengths of time. This study used a randomized block design with a single factor experiment, namely sterilization time of 3,6,9,12,15 and 18 minutes at 121℃. The quality parameters tested were: physical quality (texture and color) and sensory quality (color, aroma, taste, and texture). Observational data were analyzed using analysis of variance (Analysis of Variance) with a significance level of 5% using Co-stat software. The results showed that the duration of sterilization affected the physical quality (texture) and sensory quality (aroma, texture, and taste) but did not affect the physical and sensory color. The 9-minute sterilization time met the physical and sensory qualities of canned Rarang chicken, both hedonic and scoring, and in accordance with the F0 value of MSME products.
*Key Words: culinary, canned chicken, physical quality, sensory*

**FR066**

# The Potential of Trigona Honey as A Functional Food Solution for Malnutrition in Menggala Village, North Lombok Regency, West Nusa Tenggara Province

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Abstract. Improving the quality of human resources from Menggala Village is constrained by the low quality of health of the residents in Menggala Village. This condition is known from the large number of residents in Menggala Village who have poor nutritional status. The potential of trigona honey as a functional food solution for malnutrition in Menggala Village, North Lombok Regency, is one of the efforts that can be made to improve the nutritional condition of the community. The purpose of this activity is to improve the poor nutritional status of the community for the better through independent trigona honey therapy. The method used is discussing existing problems with the community, educating and seeing the potential of natural resources, human resources in the village, as well as the potential of Trigona honey in overcoming malnutrition, establishing problem formulations with the community, formulating activity objectives and carrying out activities with the community to overcome malnutrition through the cultivation and development of trigona honeybees independently. Trigona honeybee therapy in overcoming malnutrition can improve the nutritional status of toddlers towards a better direction, this can be seen from the physical and behavioral changes experienced by the community in Menggala Village. The nutritional status of toddlers who are malnourished after being given trigona honey therapy can experience an increase in nutrition towards a better.

Keywords: Trigona Honey, Functional Food, Malnutrition, Menggala Village

**FR067**

# The Physicochemical Properties of Green Bean Arabica from Different Area in Lombok Island

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Abstract
Lombok Island has potential in Arabica coffee production. Pre- harvest and post-harvest treatment in arabica coffee production was reported affect the characteristic of arabica coffee. This study aims to characterize the physicochemical properties of green arabica from different areas (Sajang, Sembalun, and Sapit) in Lombok Island. Parameters observed were Caffeine Levels, Protein Levels, Total Titrated Acid Levels, total solid content, lipid content, water Content, Ash Content, pH, carbohydrate content. The results showed that green bean arabica from Sembalun have high value of pH, total titrated acid levels, ash content, and carbohydrate content. However, green been arabica from Sajang showed higher value of total solid content, water content, lipid content, and protein content. In addition, green been arabica from Sajang also showed higher value of caffeine as compared to that of Sembalun and Sapit.
Keywords: arabica coffee, grean bean, Lombok, physicochemical

**FR068**

# Analysis of pH value and Color of Palm Sap (*Arenga pinnata* Merr) during Storage

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## Abstract

Palm trees as non-timber forest plants can produce sap after going through the tapping process. Palm sap has been widely consumed by the public as a fermented beverage. However, this palm sap is easy to change in quality. Therefore, the purpose of this study was to analyze the pH value and color of palm sap during storage. Samples of palm sap were obtained from farmers in Sesaot, West Lombok, West Nusa Tenggara, Indonesia. The research parameters were changes in pH and color of palm sap after tapping. Research samples were stored at various temperatures of 15, 30, and 40 ºC. Observation data was carried out every 2 hours for 2 days of storage. The results showed that the pH levels and the color of the palm sap changed after storage. After 10 hours of storage, the pH level of palm sap changed from 7.0 to 2.6 at 40 ºC; 4.8 at 30 ºC; and 6.6 at 15 ºC. Palm sap stored at 10 ºC had the lowest decrease in pH value compared to 30 and 40 ºC. The higher the storage temperature, the greater the decrease in the pH value. Along with the decrease in pH value, the color of palm sap also decreased significantly at various storage temperatures.

***Keywords****: color, palm sap, pH, storage, tapping*

**FR069**

# Quality is important, useful and the key for successful mango business

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**Abstract**
Mango is one of the main horticultural crops in Indonesia, and many businesses involved in mango related industries. This paper highlights how mango businesses can improve through quality management. This study combines qualitative and quantitative research. Primary data were collected through surveys to mango producers and traders in Lombok and Java. The primary data were completed with secondary data sourcing from reports of authors' own activities and others, in addition to literatures. The study revealed that quality of mango fruits play important and useful roles in bringing mango businesses into success. High quality mango fruits receive higher price, expand its markets, increase its demand, and improve income of the business. These increases in price, demand, and income, eventually stimulate more businesses to get involved, making mango businesses more interesting currently than previously. The consequence of these positive impacts of the increase of mango fruit quality is to increase the quality itself. The quality improvement requires management in pre and post-harvest of mango fruits, through to final consumers.

**Keywords**: Mango, quality product, quality management, price, income.

**FR070**

# Technical and Economic Analysis of Drying Process of Grain (*Oryza Sativa*) Using Vertical Dryer Machine

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**Abstract.** Incomplete drying of grain will cause the quality of the grain to decrease, both during storage and in the milling process into the rice. Among the solutions to these problems is to provide grain drying equipment technology in the form of a vertical continuous dryer machine. It is necessary to conduct technical and economic analysis with mass and temperature treatments. In the technical analysis carried out, the higher the temperature used, the faster the drying process, the highest drying capacity occurred in the continuous 50 Kg mass treatment, the highest yield value was 94%, and the economic life of the Vertical continuous dryer machine was 5 years. Wet grain with an initial moisture content of 20-30% dried until 14%. The maximum working efficiency of the tool occurs in the 50 Kg mass treatment. The economic analysis used fixed and variable costs data to calculate B/C Ratio, NPV, IRR, and BEP. Based on the calculation results, the B/C Ratio obtained 1.04, and the NPV value was Rp. 14,439,041 and NPV" Rp.13,889,728, for IRR 4.26%. and BEP of 2306 units/year or 13,836 hours/year

Keywords: grain, vertical dryer, B/C ratio, NPV, BEP

**FR071**

# The Ultrasound Cavitation on Physical and Chemical Attributes of Lemongrass Oil

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Abstract

The Ultrasound assisted extraction is a new approach green processing. Bubbles explosion enhance solvent diffusion into cell plant matrix during ultrasonic treatment. This research was aimed to observe the psycho-chemical of lemongrass oil based on the plant maturity. The lemongrass was sorted as three variables i.e stalk diameter 2-3 cm, 1-1.5 cm and 0.7-0.9 cm. Hence, the ultrasound was applied for 15 min, 30 min and 60 min. The lemongrass oils were collected after ultrasound treatment and followed evaporation step using vacuum evaporator. The pure lemongrass oils were purified using 4000 rpm centrifugation for 3 min. The ultrasonic wave generated heat that increased sharply at 20 min and gradually at rest of 40 mins until final temperature 60$^{o}$C. The diameter of lemograss stalk produced significantly oil yield and a large oil amount was extracted as increasing ultrasound period. The physical properties indicated a higher density as diameter stalk by 0.9816 g/ml and the refractive index remained stable at 1.3769. The chemical compound is dominated by citral 83.15% and ester about 8.79%. Ultrasound assisted provides faster and non-destructive lemongrass extraction and 30 mins period is sufficiently process to produce optimum yield. A larger diameter stalk size contains high yield.

Keywords: chemical, period, physical, stalk size

**FR073**

# The effect of religiosity level on the perceptions of young Muslim consumers towards Halal food criteria in Indonesia

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**Abstract.** Mixing culture due to pluralism and various food products processing technologies result in frequent questioned of the Halalness of a food product. Religiosity level is one of the factors that affect in choosing food products to consume. This study aimed to analyse the effect of religiosity level on the perceptions of young Muslim consumers towards the criteria in choosing Halal food products. Data were analysed using the Descriptive Statistics and the Jonckheere-Terpstra Test with hypothesis testing using the Monte Carlo Method. The results showed that religiosity level significantly affects the perceptions of young Muslim consumers in choosing Halal food products. Religiosity level has a significant effect on the criteria of "the presence of Halal labels or signs", "the presence of the certification from the Ministry of Health or BPOM", "aspects of freshness, benefits, quality, and taste", "aspects of cleanliness", and "aspects of comfort and practicality" in choosing food products in general; and religiosity level has a significant effect on the criteria of "the existence of intoxicants or alcohol ingredients", "credibility of the Halal certification Agency", "aspects of the legality of the food products source", and "the presence of Halal labels or signs" in deciding the Halalness of a food product.

Keywords: Halal food criteria, young Muslim consumers, consumers' perceptions, religiosity level

**FR074**

# The quality and chemical composition of eggs derived from Kampung Unggul Balitbangtan (KUB) crossed with Merawang and Murung Panggang local chickens

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*Email: nurliyani@ugm.ac.id Abstract .

Abstract. The efforts to support food security and increase the income of farmers, local chickens have a great potential to be developed into superior breeds, including superior egg production. This study aimed to evaluate the quality and chemical composition of eggs produced from Kampung Unggul Balitbangtan (KUB) Jatinom chickens crossed with Merawang Sembawa, Merawang Bangka and Murung Panggang chickens. The evaluation of the quality of chicken eggs included the exterior and interior quality, while the chemical composition of the eggs was evaluated by proximate analysis included moisture, ash, protein, fat and carbohydrate content. The research data were analyzed by One Way ANOVA. The results showed that the eggs of the three types crossed of local chickens were generally oval in shape and intermediate in color. Local chicken crossed type had a significant effect ($p<0.05$) on weight, albumen index, yolk index, yolk color, Haugh Unit (HU), albumen pH and yolk pH, but had no effect on egg specific gravity, egg index, shell thickness and shell weight. The crossed type of local chicken had a significant effect ($p<0.05$) on the moisture content of the yolk, but had no effect on the moisture. Ash, protein and carbohydrate content of albumen as well as ash, protein, carbohydrate and fat content in egg yolk. In conclusion, the quality of the exterior namely weight of the eggs, the best were the eggs from crossed of KUB with Merawang Bangka chicken. While. the interior quality of the albumen index, yolk index, yolk color and HU value, the best eggs were the result of crossed of KUB with Murung Panggang chicken. In general, differences in the types of local chicken crossed did not affect the chemical composition of the eggs produced.

Keywords: Egg quality, Chemical composition, Crossbreed local chickens

**FR075**

# The Development Strategy of Organic Rice Farming in Bantul Regency, Special Region of Yogyakarta, Indonesia

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## Abstract

The demand for organic rice needs is increasing, but the production is not maximized, therefore it is necessary to formulate a strategy for developing organic rice farming. This study aims to determine the main internal and external factors that affect organic rice farming so that it can formulate a strategy for developing organic rice farming in Bantul Regency. Respondents taken in this study consisted of stakeholders who have information and competence in the development of organic rice farming. The analytical methods used in this study include IFAS, EFAS, IE, SWOT and QSP matrices. The results showed that the main internal strength factor in Imogiri District was the availability of organic fertilizers and pesticides with the main weakness being the ability and financial management of simple. The main opportunity external factor is government programs that support organic farming and main threat is climate conditions. The main internal strength factor in Pandak District is the availability of rice seeds for organic rice farming, with the main weakness being the availability of land, most of which are leased. The main opportunity external factor is increasing for market demand and main threat is pests and plant diseases. From the SWOT matrix, the priority strategy was determined based on the QSP matrix for the development of organic rice farming in Bantul Regency, namely training of organic rice farmers' skills in farming management and marketing for Imogiri District, while for Pandak District, namely the use of natural resources potential in controlling rice plant pest organisms.
Keywords: development, organic rice, SWOT, QSPM

**FR080**

# The Application of Nata de coco-based Coatings to Fresh-cut Jackfruits during Refregerated Storage

I Wayan Sweca Yasa, Eko Basuki, Ahmad Alamsyah, Lingga Gita Dwika Sari

Jackfruit (Artocarpus heterophyllus Lam) is in high demand by Asians. It is large and difficult to peel, therefore, consumers prefer to buy jackfruit as a ready to eat product. Jackfruit is highly perishable. It ripens faster during the shelf life, and soon become unfit for eating. Development of colour, texture, and volatile compounds which contribute to flavour and aroma takes place during the ripening process. At present, edible coatings are becoming populer among consumers to preserve the parameters quality of foods. The aim of this study was to investigate the effect of application of nata de coco-based edible coatings on retention of fresh-cut jackfruit quality during a shelf life under refrigerated conditions (10 0 C). The nata de coco-based coating was developed by dissolving nata de coco and glycerol in distilled water. CaCl2 was used as a cross-linking agent. The fresh-cup jackfruit quality could be preserved under refrigerated temprature for 3 days by applied nata de coco coatings made from 3 weeks nata.

**FR081**

## The Best Combination of Gas Sensor and Machine Learning Classification Algorithm in Detecting Mango (Mangifera indica L.) Quality

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Mango is a climacteric fruit with high transpiration activity when it reaches physiological maturity due to ethylene gas production. As a result, the quality of mangoes varies from day to day. Mango quality can be determined non-destructively by using gas sensors and machine learning to detect the gas produced. However, the classification accuracy remains low. Therefore, the aim of this study was to determine the type of gas sensor, the combination of gas sensors, and the combination of gas sensors and classification algorithms in determining the quality of mangoes. The gas sensors employed are TGS 2600, MQ3, MQ2, MQ4, and MQ8. While the classification algorithms are Logistic Regression (LR), Decision Tree (DT), Random Forest (RF), Support Vector Machine (SVM), and K-Nearest Neighbor (KNN). The results demonstrate that when paired with the SVM and KNN algorithms, the TGS 2600 sensor provided the best mango fruit quality classification results. Meanwhile, KNN's classification method outperforms SVM.

**FR082**

# AN ANALYSIS ON DETERMINATION OF KEY ELEMENTS OF COCONUT PROCESSING BUSINESS DEVELOPMENT SYSTEM PROBLEMS IN KONAWE DISTRICT, ISLANDS THROUGH INTERPRETIVE STRUCTURAL MODELLING METHOD

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**Abstract.** Coconut processing business in KonaweKepulauan Regency in fact, has a strategic role in supporting economic growth, but the fact is that it tends to be neglected due to the capitalistic hegemony of the Large and Medium Enterprises. The role and participation of the government has not been able to provide real changes to the development of the coconut processing business. One of the reasons is that the handling is relatively sectoral and not designed with a holistic systems approach. As a result, the analysis of problems affecting the coconut processing business development system is not fully covered. For this reason, a comprehensive study of the problems of the coconut processing business development system is needed. The research objectives are: 1) to formulate the problems that cause weak competitiveness related to the development of coconut processing business; 2) to analyze and determine the key elements of the coconut processing business development problem.

The research method is using the Focus Group Discussion (FGD) method in depth to formulate a number of problems in the development of coconut processing businesses and coconut cultivation. In addition to the FGD method, the Interpretative Structural Modeling (ISM) method is also used to analyze and determine the key elements of the problem in the development of coconut processing business and coconut cultivation. Research results show that : 1) The main key element of the problem of the coconut processing business development system in Konawe Islands Regency is the problem of smallholder coconut production and productivity fluctuating from season to season because most coconut plants are old and the area of coconut plantations is relatively small, generally less than 1 hectare per farmer. As a result, the continuity of agro-industry production is difficult to ensure; 2) The main hierarchical level of the problem of the coconut processing business development system is the lack of sustainable assistance in the coconut processing development and management system, especially those related to technical aspects of production, marketing of processed products, financial management and accessibility of additional financial capital; and 3) All problems (MSL-1, MSL-2, MSL-3, MSL-4, MSL-5, MSL-6, MSL-7) the coconut processing business development system in Konawe Islands Regency are included in the Linkage classification except for problems related to -8 (MSL-8) is classified as independent.This provides a strong direction so that in handling these problems it should be considered carefully and carefully because there are links or relationships that can affect the effort to realize a coconut processing business development system.

Key Words : Elements of Problems, Coconut Processing, System Analysis

**FR083**

# DETERMINATION OF GROUNDWATER QUALITY FOR MINAPADI USING THE IWQI METHOD IN SANENREJO VILLAGE, JEMBER REGENCY

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ABSTRACT Irrigation water quality in agriculture has a very important role in meeting the needs of plants in order to grow well in an area. Groundwater comes from wells that are used for areas with little water availability in the dry season. The use of a water pump to remove groundwater to the surface requires a large amount of money so that the Minapadi farming system is treated which is an intercropping between fish and rice cultivation to obtain high productivity values for farmers in one harvest. Sanenrejo village is one of the agricultural locations that uses ground water for irrigation of rice fields. The farmers of Sanenrejo Village carry out agricultural activities by considering the quantity of irrigation water without paying attention to the quality of irrigation water, during the rainy season the farmers plant rice, while the dry season the farmers change to plant crops. It is important to measure the quality of irrigation water to get the suitability of the application of Minapadi and what types of plants are most suitable for agricultural activities. The method used in this study is the irrigation water quality index (IWQI), the scope of this method is regarding the problem of salinity and alkalinity of irrigation water flowing into the soil and the problem of toxicity to plants. Sampling was carried out at three different rice field well locations in the western part of Sanerejo Village using symbols S1, S2, and S3, each of which has an IWQI value of 79.43; 78.88; and 77.93. The results of these values are included in the category of low water use limits, meaning that irrigation water can be given to plants that have sensitive tolerance to salt content with moderate soil permeability. This value is suitable for minapadi cultivation with freshwater fish species in the form of carp, tilapia, and catfish. In addition, recommendations for secondary crops are obtained, namely corn, sweet corn, peanuts, cabbage, cucumber, eggplant, potato, sweet potato, tomato, watermelon, papaya, and sugarcane.

Keywords: Groundwater; irrigation, water quality;IWQI, mina padi

**FR084**

# Ethanolic Extraction of Lemongrass in a Scaled-Up Laboratory Percolator

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**Abstract.** Lemongrass *(Cymbopogon citratus)* is widely recognized for its fragrant qualities and is commonly used as spices in Asian countries. Previous research has proven that lemongrass extract, which contains the polyphenols caffeic acid and kaempferol, can decrease the absorption of glucose in the human intestine by inhibiting the alpha-glucosidase enzyme. With this beneficial potential, the production of lemongrass extract on an industrial scale is becoming necessary. In previous research, an upscaling of lemongrass extraction process using water as a solvent has been carried out in a percolator to obtain optimum alpha-glucosidase inhibitory (AGI) activity. However, other research has also shown higher AGI level of ethanolic extract of lemongrass when compared to its aqueous extract. This study hence focused on the optimization of lemongrass extraction using ethanol in an upscaled laboratory percolator with four varied parameters, the ethanol concentration, maceration time prior to percolation, maceration temperature and the percolation time. The result showed that there was no significant difference between the use of 50% and 70%-v ethanol concentration in a mixture with water. Moreover, there was no significant difference found in the yield and AGI activity resulting from a maceration conducted at room temperature, at 30°C, 35°C, or 40°C, however, a maceration time of 5 hours was found to result in the best AGI activity. The optimum percolation time after maceration was found to be 40 minutes. In conclusion, the best conditions for the ethanolic extraction of lemongrass in this percolator are the use of 50%-v ethanol-water as a solvent and to conduct 5 hours period of maceration at room temperature prior to the 40 minutes percolation.

*Keywords*: lemongrass extraction, percolator, Alpha-glucosidase inhibitor, Cymbopogon citratus, Diabetes

**FR085**

## The Physicochemical Properties of Green Bean Robusta from North Lombok

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Robusta coffee is one of the most widely cultivated coffees in Indonesia, including in the West Nusa Tenggara. The difference in the harvest process and post-harvest treatment causes differences in the characteristics of coffee, especially in physicochemical properties of robusta coffee. This study aims to characterize the physicochemical properties of green robusta from some areas in North Lombok district, such as Rempek, Selelos and Ganggelang. This study has used an experimental method with several parameter observed were pH, water content, lipid content, ash content, protein content, carbohydrate content, total solid content, total titrated acid levels and caffeine content. The results showed that green bean robusta from Ganggelang have the best standar quality of pH, water content, lipid content, ash content, protein content. carbohydrate content, total solid content, total titrated acid level and caffeine content.

Keywords: green bean Robusta, Lombok's coffee, quality

**FR086**

# Test of Consistency, Hardness, and Water Absorption on Innovative Planting Media (Block Compost) as a Solution for Utilization of Oyster Mushroom Baglog Waste

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This study aims to try and examine the potential utilization of mushroom baglog waste into block compost, with research parameters namely consistency, hardness, water absorption, pH value and Electrical Conductivity. The materials used are baglog waste, granulated sugar, EM4 and water. Before being molded into blocks, the compost is fermented for 14 days with a ratio of baglog waste composition of 500, 750 and 1000 gr. The composition of water, EM4, sugar and tapioca flour in each sample is 1L:20ml:10gr:30gr. After the compost is fermented, it is molded into blocks and dried in the sun. The composition of baglog waste affects the value of consistency, hardness, water absorption, pH and EC. The best value for consistency and hardness was at the composition of 750 g, while the best absorption was at the composition of 500 g.

**Keyword:** Mushroom baglog waste; block compost; growth media

**FR087**

# Evaluation of Stability and Physicochemical Quality of "Rarang" Chicken in a Retort Pouch Packaging with Different Sterilization Times

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ABSTRACT

The development of "rarang" chicken as a local culinary product in West Nusa Tenggara needs to be carried out to support the progress of the regional tourism sector. Canning "rarang" chicken with a retort pouch is an alternative method that can be used to achieve this goal. Sterilization time, an essential factor in the canning process, often has the opposite impact on stability and quality. Long sterilization times will increase stability but tend to reduce quality, one of which is physicochemical quality. This study aimed to determine the effect of sterilization time at 121ºC on the stability and physicochemical quality of "rarang" chicken in a retort pouch. This study used a Randomized Block Design (RBD) with a single-factor experiment, namely the sterilization time of 3, 6, 9, 12, 15, and 18 minutes at 121ºC. Observational data were analyzed using Analysis of Variance with a significant level of 5% and further testing with Honest Significant Differences (HSD). The results showed that all the treatments produced products with good stability as assessed by the absence of an increase in microbial growth, a change in pH of less than 0.5, and no increase in pressure during 14 days of incubation. However, from physicochemical quality, the length of sterilization at 121ºC significantly affects the pH, color, and texture of "rarang" chicken in retort pouch packaging. Increasing the sterilization time lowers the pH, changes the product's color from yellow-red to red and increases hardness. Sterilization at 121ºC maximum for 9 minutes produced "rarang" chicken in retort pouch packaging with good stability and physicochemical quality. The pH (6) and texture (19.07 N) were not significantly different from the lowest sterilization time. In addition, the color (Hueº 55.98) was still in the yellow-red criteria.

Keywords: canning, physicochemical quality, stability, sterilization time, "rarang" chicken

**FR088**

# Sensory Quality of Sate Rembiga in a Retort Pouch Packaging with Different Sterilization Time

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ABSTRACT

"Rembiga" satay is a local culinary product of Lombok Island which is in high demand by tourists. The development of sate rembiga into a product with high shelf life that is practical and efficient to carry has the potential to increase the market reach. To achieve this goal, the development of "rembiga" satay can be directed at the canning process using retort pouch. The application of commercial sterilization in the canning process is not only aimed at killing microorganisms, but must be able to maintain the quality of the final product by minimizing quality damage, especially sensory quality. The purpose of this study was to determine the effect of sterilization time at 121ºC on the organoleptic quality of "rembiga" satay in a retort pouch. The design used in this study was a Randomized Block Design (RBD) with a single factor experiment, namely the 3, 6, 9, 12, 15 and 18 minutes sterilization time at 121 ºC. Observational data were analyzed using Analysis of Variance with a significance level of 5% and further tested with the Honest Significant Difference (HSD). The result showed that the sterilization time at 121ºC had significantly affected the texture, color and appearance, but did not affect taste and aroma. The increase in sterilization time decreased the panelist's level of preference for the texture, color and appearance of "rembiga" satay in retort pouch. Sterilization for 9 minutes is the maximum sterilization time to produce "rembiga" satay in retort pouch which is preferred by panelists because it has a soft texture, slightly red-brown color and intact appearance.

Keywords: canning, "rembiga" satay, retort pouch, sensory quality, sterilization time

**FR089**

## Pumpkin enriched shirataki noodle as a low calorie and nutritious functional food

Zainuri, Hartanti, Dody Handito

Demand for functional foods has increased nowadays. Utilization of local food material may play important role in functional food development. This paper present the potential role of pumpkin flour in improving the quality of shirataki noodles. This research was carried out in laboratorial trial using Completely Randomized Design with the treatment of pumpkin flour fortification at 6 different concentrations (0%, 2%, 4%, 6%, 8%, and 10%) and 3 replications. Data observation were analyzed using the analysis of variance at 5% significant level, and were further analyzed using the honest significant difference at the same level when needed. The results indicated that pumpkin flour fortification significantly increased the nutrition level of shirataki noodles. It also improved the color, although it did not change the panelist preference to the aroma and the taste of the products. Further research is needed to optimize the process for producing good quality pumpkin shirataki noodles to support the development of nutritious functional foods.

Keywords: functional foods, pumpkin, quality, shirataki noodle

**FR090**

## Combination Activity of Lactic Acid Bacterial Culture to Improve Quality of Honey Pineapple Yoghurt Enriched With Seaweed Eucheuma spinosum

Tri Isti Rahayu, Baiq Rien Handayani, Mutia Devi Ariana, Moegiratul Amaro, and Yesica Marcelina Romauli Sinaga

Demand for functional foods has increased nowadays. Utilization of local food material may play important role in functional food development. This paper present the potential role of pumpkin flour in improving the quality of shirataki noodles. This research was carried out in laboratorial trial using Completely Randomized Design with the treatment of pumpkin flour fortification at 6 different concentrations (0%, 2%, 4%, 6%, 8%, and 10%) and 3 replications. Data observation were analyzed using the analysis of variance at 5% significant level, and were further analyzed using the honest significant difference at the same level when needed. The results indicated that pumpkin flour fortification significantly increased the nutrition level of shirataki noodles. It also improved the color, although it did not change the panelist preference to the aroma and the taste of the products. Further research is needed to optimize the process for producing good quality pumpkin shirataki noodles to support the development of nutritious functional foods.

**FR091**

# The Effect of Wall Material Ratio and Drying Methods on The Encapsulation Behavior and Antioxidant Activity of Lemuru (Sardinella lemuru) Smart Flavor

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This study aims to determine the effect of the wall materials ratio and drying methods on the characteristics of smart flavor lemuru microcapsules. The experimental design was a two-factor Randomized Block Design (RBD), where wall materials ratio (maltodextrin: gum arabic) and drying methods (spray drying and freeze drying) as factors. The results showed that a higher ratio of gum arabic can increase the water content, antioxidant activity, and encapsulation efficiency. In contrast, the lower proportion of gum arabic can increase the yield and color values. Based on microencapsulation method, spray drying produces higher moisture content, coloring, antioxidant activity, and encapsulation efficiency, while freeze drying has higher yield values. Microcapsules with the highest moisture content, lightness, antioxidant activity, and encapsulation efficiency were at the ratio wall materials (maltodextrin: gum arabic) of 7:3 by spray drying, with value 9.15%; 100; 31.23%; and 78.46%, respectively. The highest yield (17,19%) was at the ratio wall materials (maltodextrin: gum arabic) 8:2 by freeze-drying. The morphology of the microcapsules by spray drying is spherical, and by freeze drying, it is flaky and sharp in shape.

Keywords: lemuru, smart flavor, microencapsulation, wall materials, drying methods

**FR092**

# Development of Functional Sausage Made of Corn Starch and Moringa Flour With The Addition of Mocaf (Modified Cassava Flour) and Porang Flour

Satrijo Saloko[1], Siska Cicilia[1], Lara Mahya Adila[2]

This study aims to determine the best formulation of corn starch: moringa flour with the addition of mocaf and porang flour to produce the best quality sausage. The method used was an experimental method carried out in the laboratory using a Completely Randomized Design (CRD) with one factor, namely the concentration of corn starch and moringa flour which consists of 6 treatments. The treatments included the concentration of corn starch: moringa flour, namely P0 (75%: 0%), P1 (72%: 3%), P2 (69%: 6 %), P3 (66% : 9%), P4 (63% : 12%), P5 (60% : 15%). The sausage quality parameters tested were chemical quality (contents of calcium oxalate, moisture, ash, protein, and crude fiber), physical quality (test color, texture) and organoleptic quality (color, aroma, elasticity, and taste). Observational data were tested by analysis of variance at 5% level using Co-Stat software and futher tested using the Honestly Significant Difference (HSD) test. The results showed that P1 was the best treatmet which produces 62.59% moisture content; ash 1.00%; 2.09% protein; crude fiber 11,35%; oHue 88,52o (green); texture 1.73 N/mm2; slightly unpleasant smell; slightly chewy; and taste is not bitter; and the hedonic response was somewhat favored by the panelists.

Keywords: analog sausage, corn starch, mocaf, moringa flour, porang flour

**FR093**

# Quality of Catfish Meatballs with Different Levels of Taro Flour (Colocasia esculenta L. Schott) Addition

Rini Nofrida[1)], Zainuri[1)], Yeni Sulastri[1)], Nila Alfina Oktavia[1)]

Taro flour contains starch which has the ability to bind water well. Taro flour has a high amylopectin content of 83.49% (Hartati and Titik, 2003). High levels of amylopectin cause taro flour to be fluffier and sticky, so that it can improve the physical properties of catfish meatball. Other nutritional content in taro is also expected to increase the chemical content of catfish meatball. This study aims to determine the effect of adding taro flour (Colocasia esculenta L. Schott) to the quality of catfish meatballs. This study used the experimental method with Randomized Block Design with a single factor consisting of 6 treatments namely (STPP 0.3%), (taro flour 5%), (taro flour 10%), (15% taro flour), (20% taro flour) and (25% taro flour). Each treatment was repeated 3 times to obtain 18 experimental units. The data obtainmed from observations were analyzed using Analysis of Variance using Co-stat Software, if there was a significantly different effect then they were further analysed by the Honestly Significant Difference test at the 5% significance level. The results showed significant results on ash content, protein content, texture value, hedonic value of taste, color and texture. The best treatment with the addition of 10% taro flour which resulted in the water content of 68.03%, ash content of 1.67%, protein content of 9.13%, elasticity of 186.84 Pa and taste, color and texture which were favored by the panelists.

Keywords: constituent, catfish, meatball, taro flour.

**FR094**

# FOOD PRODUCTION PREDICTION BASED ON FUZZY ASSOCIATIVE MEMORY MODELING

Agriananta Fahmi Hidayat[1,2], Taufik Djatna[3]

The production of agricultural products is how to increase the quantity followed by quality. There are several factors in the production of agricultural products starting from the quality of the seeds, the method of treatment, and climatic conditions, and soil conditions. Yield prediction is very important because it directly affects farming activities and farmers' income. Prediction of food crop production using the FAM method, the fuzzy associative memory (FAM) technique is a method that can translate structured linguistic conditions into a working-numeric framework. FAM belongs to the class of artificial neural networks (ANN) whose input patterns, output patterns, and connection weights are fuzzy. Analysis of the calculation of the FAM model can be used as an approach to predicting the production of food crops

Keywords: Fuzzy Associative Memory, Prediction, Production of food crops

**FR095**

## Potential of Compost Tea to Inhibit Plant Diseases in Agricultural Crops

Nurul Faziha Ibrahim, Muhammad Amali Aizat Muhammad Harisi, Suhaizan Lob

Plant disease is the main challenging in agriculture sector that affect the plants around the world. Uncontrolled of the diseases problem in crop production will lead to economic losses. To counteract with this problem, compost tea has been used as a sustainable approach in integrated management of plant diseases. Compost tea has gain popularity over conventional fertilizer as it can be used to improve soil condition, increase beneficial microbes in soil, as fertilizer to the plant and some are used to reduce occurrence of plant disease especially in current trend toward organic farming. Besides that, increase of fungicide and fertilizer cost has led the farmers to use compost tea as an economic approach for nutrient supplement to improve plant growth quality and eventually less susceptibility to plant disease. Various studies have proved the effects of beneficial microorganisms and nutrients in compost tea in assisting prevention of diseases in several crops. This study is aimed to highlight the potential of compost tea to suppress some of plant disease in agriculture crops. Application of compost tea in agriculture sector is hoped to reduce the dependency of chemical fertilizer and pesticides that lead to environmental pollution.

Keywords: Compost tea, plant disease, fertilizer, inhibition

**FR096**

# Simulation Of Turbine Road Wheel (Runner) Models in Microhydro Power Plant (PLTMH) Systems by Completing Dimensional Analysis

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Energy needs are increasing along with the development of science and technology (IPTEK). Various electronic equipment has been designed to facilitate human activities. However, the availability and capability of the State Electricity Service (PLN) are still insufficient.
Given the availability of Indonesia's natural resources, especially in West Nusa Tenggara (NTB), in this case, it is a resource that can be used as an alternative for energy development, one of which is by utilizing river flows. Micro-hydro power plant (PLTMH) is a technology that utilizes river flow to turn turbines and dynamos so that they can produce electrical energy. In the PLTMH system, there is a sub-system, namely a turbine where in the system there are road wheels (runners) that play a role in converting potential energy into mechanical energy, then transmitted to the generator to be converted again into electrical energy.
Considering that the role of the runner is very large, research was carried out with the title Simulation of the Physical Model of Turbine Runners in Micro-hydro Power Generation Systems (PLTMH) with the Completion of Dimensional Analysis. To learn the technique of zooming (scale up) the physical model of the road wheels through simulation. The data obtained from the mathematical equations are expected to be used for the development of PLTMH.
Based on the results of research using two runner physical models, namely runners with trapezoidal and square blade surfaces, an equation for scale-up is obtained. This equation is obtained using non-dimensional parameters and a mathematical approach. This equation has been validated by statistical methods so that the average error value (ERMS, %) is below 10% so that the equation can be said to be valid for scale-up purposes. In addition, based on the analysis tool, values have been obtained indicating that the two runner models can work well in certain conditions, namely in conditions where there is a waterfall or a height difference (head).

Keywords: Turbine runner, dimensional analysis, scale-up, micro hydro power plant (PLTMH)

**FR097**

# THE EFFECT OF STERILIZATION TIME ON ORGANOLEPTIC QUALITY RARANG CHICKEN IN RETORT BAG PACKAGIN

Moegiratul Amaro[*1)], Winda Herliana Putri[1)], Baiq Rien Handayani[1)], Mutia Devi Ariyana[1)], Tri Isti Rahayu[1)], Sri Widyastuti[1)], Nazzaruddin[1)]

Typical culinary delights such as chicken rarang have the potential to be developed as souvenirs typical of the island of Lombok. Rarang chicken contains high levels of water and oil or fat so it has a short shelf life. This study aimed to determine the sensory quality of Rarang chicken in retort bag packaging which was sterilized for different lengths of time. This study used a randomized block design with a single factor experiment, namely sterilization time of 3,6,9,12,15 and 18 minutes at 121?. The quality parameters tested were: sensory quality (color, scent, taste, appearence and texture). Observational data were analyzed using analysis of variance (Analysis of Variance) with a significance level of 5% using Co-stat software. The results showed that the duration of sterilization affected on the texture, color and appearance of hedonic retort bag chicken rarang and also had an effect on texture and color by scoring. Sterilization for 12 minutes can be recommended as the best treatment when compared to other treatments based on the aroma, taste, texture, color and appearance that the panelists like.

**FR098**

# Rice Noodle (Vermicelli) Characteristics Made From Local Cultivar Red Rice and Corn Starch

Dody Handito[1, a)], I Wayan Sweca Yasa[1, b)], Satrijo Saloko[1] and Desy Wulandari[2]

The objectives of this research was investigated a proper proportion of red rice flour and corn starch in the formulation of vermicelli as a functional food. The experiment was arranged with Randomized Completely Block Designs (RCBD) of a single factor with three replications. The proportion of red rice and corn starch in total weight of flour in formulation were 100 g and 35 g; 80 g and 55 g; 60 g and 75 g; 40 g and 95 g; 20 g and 115 g, respectively; and 100 g white rice flour and 35 g corn starch to produce rice noodle (vermicelli). Reduction sugar, amylose content and acceptence of the vermicelli were measured, and the highest score of the vermicelli acceptance was feed to diabetic mice to determine the efficacy of the vermicelli lowering the blood glucose. Data were analyzed with analysis of variance at 5 percent level of significancy. The post hoc test was honestly significant difference at the same level of significancy. The result showed that the higher proportion of red rice flour in formulation, the higher acceptance score and amylose content of vermicelli, but the lower reduction sugar and blood glucose of diabetic mice. The proportion of 100 g red rice flour and 35 g corn starch gave the highest score of the vermicelli acceptance (aroma, taste, colour, texture), the highest amylose content (36.6%), the lowest reduction sugar (3.27%) and the blood glucose of diabetic mice reduce sharply.

**FR099**

# Community Based Integrated Organic Solid Waste Management In Sandik Village West Lombok Districh

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## ABSTRACT

This study aims to determine the application of the concept of community-based integrated organic solid waste management, combining technical aspects and socio-economic aspects that can be implemented on a community scale in rural areas. In general, waste is transported and disposed of to landfill so that all waste accumulates in landfill. Most of the waste handling is carried out after the waste has been buried, making it difficult to manage it. Handling of waste at the source is minimal, so the landfill fills up quickly. The concept is to minimize waste generation so that less waste goes to landfill. The proposed concept is integrated management, combining technical aspects that apply the concept of biorefinery and socio-economic aspects. This concept is to support the transition to a zero waste concept by developing technologies and systems that eliminate waste throughout the entire waste value chain as much as possible, through reuse and recycling. The proposed framework for addressing this challenge consists of reduction planning, waste collection, waste processing, collaborative platforms for symbiosis, conversion and recycling of waste into resources. A systematic literature review was used to examine the technology and research in each of the themes to determine how the technology can support Community Based Integrated Organic Waste Management (CBIOWM). Bioprocesses are integrated to various biomass resources and produce various products. To achieve optimal integration, the classification of biomass waste is adjusted to the selected bioprocess. This research discusses the suitability of the method of converting waste into products and making integrated biorefinery. In this study, integration is carried out through process integration, symbiotic platforms and by-products. This review seeks to conceptualize a framework for identifying and integrating technologies and governance for biomass conversion and management. Research reveals that organic waste technology, collection and conversion can be integrated through biorefinery concepts, institutional designs and collaborative platforms for symbiosis and process integration. This study also examines the limitations of applying CBIOWM technology in rural areas, by choosing Sandik village as a case study.

*Key word : Community Based, Integrated, Organic Waste, Biorefinery*

**FR100**

# Damage Detection System for Avocado *(Persea Amaricana Mill)* Using Gas Sensors With Stratified K-Fold Cross Validation Method

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## ABSTRACT

The purpose of this research is to build a model that can detect damage to avocados, using gas sensors that are accurate, precise, specific, and sensitive. The specific goal is to get the best model from the several machine learning methods used. The best model will be obtained through a classification algorithm. The input data to be processed is gas data in units of ppm measured from damaged and normal avocados that have been stored for 7 days. Gas data recording uses the TGS 2600, MQ-3, MQ-4, MQ-2, and MQ-8 sensors. Each data quality will be improved by cleaning and normalizing data. The quality-enhanced data is then used as input to the machine learning system. The machine learning model used is the Ada-boost, Decision Tree, Multi Layer Perceptron (MLP) classification model and the Stratified K-Fold Cross Validation method. The trained model is then tested with a comparison of the number of test data and training data which is 70:30. The test results show the accuracy of the avocado damage detection system using ppm data obtained using the gas sensor and the Stratified K-Fold Cross Validation method with system accuracy on the Ada-boost value having an accuracy of 100%, 100%, 100% and 50%, with a method accuracy value classifier with 4x repetitions.

*Key Word : Avocado, Damage, Detection System, Classification Model, Stratified K-Fold Cross Validation method*

FANRes 2022 7TH

International Conference on Food, Agriculture, and Natural Resource

# The 7th IC-FANRes 2022

## November 24th-25th, 2022

**Merumatta Senggigi Lombok**

Lombok, West Nusa Tenggara, Indonesia

# The Potential of Trigona Honey as A Functional Food Solution for Malnutrition in Menggala Village, North Lombok Regency, West Nusa Tenggara Province

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Abstract. Improving the quality of human resources from Menggala Village is constrained by the low quality of health of the residents in Menggala Village. This condition is known from the large number of residents in Menggala Village who have poor nutritional status. The potential of trigona honey as a functional food solution for malnutrition in Menggala Village, North Lombok Regency, is one of the efforts that can be made to improve the nutritional condition of the community. The purpose of this activity is to improve the poor nutritional status of the community for the better through independent trigona honey therapy. The method used is discussing existing problems with the community, educating and seeing the potential of natural resources, human resources in the village, as well as the potential of Trigona honey in overcoming malnutrition, establishing problem formulations with the community, formulating activity objectives and carrying out activities with the community to overcome malnutrition through the cultivation and development of trigona honeybees independently. Trigona honeybee therapy in overcoming malnutrition can improve the nutritional status of toddlers towards a better direction, this can be seen from the physical and behavioral changes experienced by the community in Menggala Village. The nutritional status of toddlers who are malnourished after being given trigona honey therapy can experience an increase in nutrition towards a better.

Keywords: Trigona Honey, Functional Food, Malnutrition, Menggala Village

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*by* Raudatul Jannah

**Submission date:** 10-Apr-2023 12:21PM (UTC+0700)
**Submission ID:** 2060290895
**File name:** P_1.pdf (30.37K)
**Word count:** 322
**Character count:** 1984

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