A Final Project Report

AC21 Special Project Fund (SPF) 2018: Joint Mini-Symposium on Agro-Industry Research for Well-Being

12-14 November, 2018

Faculty of Agro-Industry, Kasetsart University, Bangkok, Thailand.

Introduction

This Joint mini-symposium on “Agro-Industry Research for Well-Being” is a mini-symposium collaborated among 4 partners in AC21 including

1. Kasetsart University, Thailand
2. Nagoya University, Japan
3. Gadjah Mada University, Indonesia
4. Stellenbosch University, South Africa

The objective of this symposium is to share research work in the area of Agro-Industry under the theme of “Well-Being” among AC-21 members. The activity is organized during 12-14 November, 2018, by Faculty of Agro-Industry, Kasetsart University, Thailand. A program of this activity includes 2-full days of oral presentations and 1 day of field study/excursion. AC 21 members who participate in this mini-symposium are sponsored accommodation, local transportation, meals and activities during the symposium period. Participants are responsible for their own travel expenses, personal expenses, visa expenses and insurance. Non-AC21 members are also welcome to participate using their own expenses.
Summary of Activities

In the first 2 days of this activity, a total of 24 presenters presented there research work under 6 theme including Agro-Industry Management, Material Science, Functional Food Ingredients, Biotechnology, Food Quality and Security, and Molecular Biology. There are 5 presenters from Nagoya University, 6 presenters from Gadjah Mada University, 5 presenters from Stellenbosch University, 7 presenters from Kasetsart University and 1 presenter from Gifu university (non-AC21 member). Each presenter was given 20 min for presentation including Q&A. Abstract book containing program, abstract and CV of presenter are attached at the end of this report (Appendix 1). During the first 2 days of symposium, there are a total of 55 participants including presenters, faculty staffs, graduate students. List of participants are available in Appendix 2.
In the last day of the symposium, all presenters visited C.P. Retailing and Marketing Co., Ltd. or CPRAM, one of the affiliated companies in the marketing and distribution business within Charoen Pokphand Group that is the leading company in production and distribution of ready to eat food and bakery products at Phatumtani Province. During the visit participants, had chance to see the production lines and discussed with vice manager of factory regarding on quality assurance system, logistic and supply chain management. In the afternoon, the group also visited Chao Sam Praya National Museum and the Ancient Palace in Ayutthaya Province.
Outcome:

1. Raise awareness of AC21 and AC21 activities
2. Learn about other AC21 member universities (i.e. facilities, administrative system, and research focus)
3. Update information and share research work under the theme of Agro-Industry Research for Well-being
4. Expand networking among participants, especially among AC21 members university
5. Learn about Thailand Agro-Industry (Field trip)
6. Learn about Thai culture (Excursion)
7. Initiate possible future collaborations

Future Collaborations

During the symposium many future collaborations were discussed for example:

1. Undergraduate student exchange: summer school and internship
2. Graduate student exchange: research work
3. Staff Exchange
4. Future Joint symposium
This ‘Book of Abstract’ has been revised for the completion of content after the Joint Mini-Symposium on 1 December 2018.
Welcome Note from Dean of Faculty of Agro-Industry, Kasetsart University

We are delighted to welcome you, colleagues and friends, to the “AC21 Joint Mini-Symposium on Agro-Industry Research for Well-Being 2018” at the Faculty of Agro-Industry, Kasetsart University, Bangkok, Thailand! We are proud to offer our home to be the hosting venue in congregating AC21 researchers and scholars from Nagoya University, Stellenbosch University, Universitas Gadjah Mada, and Kasetsart University altogether for connecting and collaboration.

In the United Nations’ Sustainable Development Goals (SDGs), ‘Well-Being’ is listed as in goal no. 3 “Good Health and Well-Being”. This signifies criticality and priority of the issue for the prosperity of people now and in the future. Agro-Industry research is, indeed, one of the necessary sciences in bringing people to well-being through matters related to people’s diet. Our contribution in the improvement and sustainability of the food and agro-industrial sectors are essential in achieving the goal. Broad range of topics in this Joint Mini-Symposium from Agro-Industry Management, Material Science, Functional Food Ingredients, Biotechnology, Food Quality and Security, or even Molecular Biology, for us, is viewed as scholars’ attempt in advocating to the well-being of people.

We sincerely hope that this Joint Mini-Symposium will be academically and personally meaningful as the symposium is deliberated.

Yours sincerely,

Anuvat Jangchud
Associate Professor and Dean of Faculty of Agro-Industry,
Kasetsart University, Bangkok, Thailand
Welcome Note from AC 21 Joint Mini-Symposium Steering and Organizing Committees

On behalf of organizing committees, I would like to thank all of participants for the contribution to the Joint Mini-Symposium on “Agro-Industry Research for Well-Being”. This Mini-Symposium is supported by Academic Consortium for the 21st Century (AC21) Special Project Fund 2018. It is organized under collaboration among AC21 partners including Kasetsart University (Thailand), Nagoya University (Japan), Universitas Gadjah Mada (Indonesia), and Stellenbosch University (South Africa).

The objective of this symposium is to share research work in the area of Agro-Industry under the theme of “Well-Being” among AC-21 members. The program of this activity includes 2-full days of oral presentations and 1 day of field study/excursion. There are 24 oral presentations, which are divided into 6 sessions including, Agro-Industry Management, Material Science, Functional Food Ingredients, Biotechnology, Food Quality and Safety, and Molecular Biology.

I strongly believe that the Joint Mini-Symposium will not only initiate the collaboration among participants, but also lead to other international activities such as student internship, staff exchange, student mobility, etc. between AC21 members. Hope you all enjoy this symposium. Welcome to Thailand!!

Best regards,

Sasitorn Tongchipakdee

Steering Committee

Assistant Professor and Associate Dean for International Relations

Faculty of Agro-industry, Kasetsart University
AC 21 Joint Mini-Symposium on Agro-Industry Research for Well-Being 2018 Working Team

Steering Committee
Sasitorn Tongchitpakdee

Organizing Committees
Busarin Chongcharoenyanon
Krissana Tressilvattanakul
Phuthai Buakham
Warapa Mahakarnjanakul (Also advisor to the committees)
Wasaporn Chanput

Artwork and Cover Designer
Janenutch Sodsai
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The Academic Consortium for the 21st Century (AC21)

The Academic Consortium for the 21st Century (AC21) was established on June 24, 2002 at the International Forum 2002 hosted by Nagoya University, Japan, as an international network comprised of educational, research and industrial organizations throughout the world. The Forum brought together the presidents and high-ranking delegations from twenty-four of the world’s leading education and research institutions, and resulted in the founding of a new and vigorous global partnership in higher education, “Academic Consortium AC21”.

The principal theme of the inaugural forum, “The Role of Universities in the 21st Century”, continues to guide AC21’s activities to this day. In an era of continuous change, we believe that institutions of higher education must take the initiative in responding to the rapidly transforming needs of society, and that an international university network, with its common pool of knowledge, expertise and experience, comprises the optimum means to accomplish this. As demonstrated by the scale of our projects and activities, AC21 is firmly committed to contributing to the global knowledge sector.

The vision of AC21 is the promoting of cooperation in education and research between members, the bridging between different societies in the world and the delivering of wisdom to all people to mutually understand and share values, knowledge and cultures necessary to improve quality of life and to foster co-existence beyond national and regional boundaries in the 21st century.

Information from The Academic Consortium for the 21st Century website
AC21 Joint Mini-Symposium on Agro-Industry Research for Well-Being 2018 Objectives

This Joint mini-symposium on “Agro-Industry Research for Well-Being” is a mini-symposium collaborated among AC21 partners including Kasetsart University, Gadjah Mada University, Stellenbosch University and other AC-21 members. The objective of this symposium is to share research work in the area of Agro-Industry under the theme of “Well-Being” among AC-21 members. Research work in the area of Food Science and Technology (i.e. Food Safety, Food Chemistry, Food Biochemistry, Nutrition, Food Engineering), Product development, Biotechnology, Packaging and Materials, Textile Science and Agro-Industry Supply Chain Management.

Not only promote collaboration in research, this project outcome will promote other international activities such as student internship, staff exchange, student mobility, etc. After this first symposium, Kasetsart University plan to organize this event regularly in order to continue international collaboration between AC21 members. The event can be extended to other non-AC21 member for more networking in the area of Agro-Industry. In the future, not only Faculty staff can participate in, but also graduate students.
AC 21 Joint Mini-Symposium on Agro-Industry Research for Well-Being 2018 Participating Universities

Kasetsart University, Thailand
Nagoya University, Japan
Stellenbosch University, South Africa
Universitas Gadjah Mada, Indonesia
Kasetsart University Campus Map
The Faculty of Agro-Industry Information

The Faculty of Agro-Industry at Kasetsart University was established on 23 November 1980, though courses covering aspects of Agro-Industry had been offered through the Faculty of Agriculture’s Department of Food Sciences since 1964.

At the time of the Faculty’s establishment, Thailand was undergoing a rapid change from an agricultural based to a newly industrialized nation. With the growing export of its agricultural produce, there was an urgent need to develop personnel specially trained in Agro-Industry and the research and development of Agro-Industrial products. Kasetsart, one of Thailand’s leading universities and the first to offer degree programs in Agricultural Sciences, gave full support to the Government’s third national, economic and social development plan and set up the Faculty of Agro-Industry at its main campus.

Since then, the Faculty of Agro-Industry has been producing quality graduates each year as well as working with government and private institutes on training and research, to ensure that Thailand’s standards of professional and technical, knowledge in the field of agro-industry continue to remain high and of international caliber.
# Meeting Timeline – Day 1

**Monday, November 12, 2018: @ AI 2204, Faculty of Agro-Industry, Kasetsart University**

<table>
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<tr>
<th>Ceremony Session</th>
<th>Time</th>
<th>Activities</th>
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<tbody>
<tr>
<td></td>
<td>08:30 – 09:00</td>
<td>Registration</td>
</tr>
</tbody>
</table>
| Welcome Session:                  | 09:00 – 09:10 | Dean of Faculty of Agro-Industry  
Assoc. Prof. Anuvat Jangchud, Ph.D. |
| Opening Ceremony:                 | 09:10 – 09:20 | Acting President, Kasetsart University  
Chongrak Wachrinrat, Ph.D.          |
| Group photo                       | 09:20 – 09:30 |                                                                             |
| Presentation of four universities:| 09:30 – 10:30 | Nagoya University, Stellenbosch University,  
Universitas Gadjah Mada and Kasetsart University |
| Morning Break @ AI 2205            | 10:30 – 10:50 |                                                                             |

## Theme 1: Agro-Industry Management

**Chair: Krissana Treesilvattanakul**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities</th>
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</table>
| 10:50 – 11:10         | Maricel Krügel, Ph.D., Stellenbosch University  
Incorporating the Global Food Industry Challenge ‘Profit rather than Waste’ in Trial Design and Product Development |
| 11:10 – 11:30         | Anggoro Cahyo Sukartiko, Ph.D., Gadjah Mada University  
Geographical Indication of Indonesian Agroindustrial Products                                |
| 11:30 – 11:50         | Nafis Khuriyati, Ph.D., Gadjah Mada University  
Technology for Sustainable Agroindustry                                                     |
| 11:50 – 12:10 pm      | Adi Djoko Guritno, Ph.D., Gadjah Mada University  
Price Disparity and Distribution of Income of Agricultural Products in Indonesia: Study of Logistics and Value Chain |
| 12:10 – 12:30         | Krissana Treesilvattanakul, Ph.D., Kasetsart University  
Research & Development Management Investigation Review for Commodity Value Path             |
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<tr>
<th>Time</th>
<th>Activities</th>
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<tbody>
<tr>
<td>12:30 – 13:30</td>
<td>Lunch @ AI 2205</td>
</tr>
<tr>
<td><strong>Theme 2: Material Science</strong>&lt;br&gt;Chair: Namfone Lumdubwong</td>
<td></td>
</tr>
<tr>
<td>13:30 – 13:50</td>
<td><em>Han Wang, Nagoya University</em>&lt;br&gt;Correlation between Complex Index of Refraction Value of Terahertz Region and Wood Properties Measured by SilviScan</td>
</tr>
<tr>
<td>13:50 – 14:10</td>
<td><em>Kanitta Watcharaporn, Ph.D., Kasetsart University</em>&lt;br&gt;Comparison of Natural Wood Ash Solutions to Indigo Dyed Cotton Fabrics</td>
</tr>
<tr>
<td>14:10 – 14:30</td>
<td><em>Piyawanee Jariyasakoolroj, Ph.D., Kasetsart University</em>&lt;br&gt;Relationship of Microstructural Changes and Physical Properties of Biaxially Oriented Polylactide / Polyethylene Glycol Films</td>
</tr>
<tr>
<td>14:30 – 14:50</td>
<td><em>Namfone Lumdubwong, Ph.D., Kasetsart University</em>&lt;br&gt;Heat Sealability &amp; Food Applications of Edible Starch Films</td>
</tr>
<tr>
<td>14:50 – 15:10</td>
<td>Afternoon Break @ AI 2205</td>
</tr>
<tr>
<td><strong>Theme 3: Functional Food Ingredients</strong>&lt;br&gt;Chair: Wasaporn Chanput</td>
<td></td>
</tr>
<tr>
<td>15:10 – 15:30</td>
<td><em>Suvimol Charoensiddhi, Ph.D., Kasetsart University</em>&lt;br&gt;Seaweeds-Derived Potential Functional Food Ingredients for Gut Health Benefits</td>
</tr>
<tr>
<td>15:30 – 15:50</td>
<td><em>Kohji Kitaguchi, Ph.D., Gifu University</em>&lt;br&gt;Anti-Inflammatory Effects of Pectin in Intestinal Macrophages</td>
</tr>
<tr>
<td>15:50 – 16:10</td>
<td><em>Supriyadi Supriyadi, Ph.D., Gadjah Mada University</em>&lt;br&gt;The Antioxidant Potential of Petai China (<em>Leucaena leucocephala</em> L.), Kabau (<em>Archidendron bubalinum</em>), and Jengkol (<em>Pithecellobium jiringa</em>) Bean during Steaming and Identification of the Bioactive Compounds of the Beans</td>
</tr>
<tr>
<td>16:10 – 17:00</td>
<td>Faculty visit&lt;br&gt;Car delivery to KU home</td>
</tr>
<tr>
<td>18:00 – 20:30</td>
<td>Reception Dinner @ KU Home</td>
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</table>
### Meeting Timeline – Day 2

**Tuesday, November 13, 2018 @ AI 2204, Faculty of Agro-Industry**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 – 09:20</td>
<td><em>Tohru Yoshimura, Ph.D., Nagoya University</em> Enkaryotic D-Serine Dehydratase and its Application to D-Serine Assay</td>
</tr>
<tr>
<td>09:20 – 09:40</td>
<td><em>Tyas Utami, Ph.D., Gadjah Mada University</em> Indigenous Probiotic as a Starter Culture for Milk Fermentation and its Functional Properties</td>
</tr>
<tr>
<td>09:40 – 10:00</td>
<td><em>Endang S. Rahayu, Ph.D., Gadjah Mada University</em> Gut Microbiota and Probiotics: Indonesian Perspective</td>
</tr>
<tr>
<td>10:00 – 10:20</td>
<td><em>Prakit Sukyai, Ph.D., Kasetsart University</em> Cellulose Extraction from Sugar Cane Bagasse and Its Utilization</td>
</tr>
<tr>
<td>10:20 – 10:40</td>
<td><em>Tantawan Pirak, Ph.D., Kasetsart University</em> Utilization of Natural Extracts and Hydrocolloids as Functional Ingredients in Meat and Poultry Products</td>
</tr>
<tr>
<td>10:40 – 11:00</td>
<td>Morning Break @ AI 2205</td>
</tr>
</tbody>
</table>

**Theme 5: Food Quality and Security**  
**Chair: Warapa Mahakarnchanakul**

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:00 – 11:20</td>
<td><em>Elsje Pieterse, Ph.D., Stellenbosch University</em> Insects: The Changing Face of Agriculture</td>
</tr>
<tr>
<td>11:20 – 11:40</td>
<td><em>Marena Manley, Ph.D., Stellenbosch University</em> Near Infrared Hyperspectral Imaging for Whole Grain Evaluation</td>
</tr>
<tr>
<td>11:40 – 12:00 pm</td>
<td><em>Willem Botes, Stellenbosch University</em> A Collaborative Approach to Pre-Breeding in South Africa</td>
</tr>
<tr>
<td>12:00 – 12:20</td>
<td><em>Lindy Joy Rose, Ph.D., Stellenbosch University</em> Mycotoxins—a Persistent Food Safety Threats</td>
</tr>
<tr>
<td>12:20 – 13:30</td>
<td>Lunch @ Saha Poj Restaurant of IFRPD (on campus)</td>
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<tr>
<td>Time</td>
<td>Activities</td>
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<tr>
<td>13:30 – 13:50</td>
<td>Hiroaki Oda, Ph.D., Nagoya University Chrononutrition</td>
</tr>
<tr>
<td>13:50 – 14:10</td>
<td>Andres D. Maturana, Ph.D., Nagoya University Real-time and Label-free Observation of Living Cells in 3 Dimension using Digital Holography Microscopy</td>
</tr>
<tr>
<td>14:10 – 14:30</td>
<td>Hideo Nakano, Ph.D., Nagoya University Ecobody Technology: a Novel Antibody Screening and Production Method of Monoclonal Antibodies by Single B-Cell RT-PCR and <em>Escherichia coli</em> <em>In Vivo</em> and <em>In Vitro</em> Expression Systems</td>
</tr>
<tr>
<td>14:30 – 14:45</td>
<td>Certificates and tokens of appreciation ceremony</td>
</tr>
<tr>
<td>14:45 – 15:00</td>
<td>Wrap-up &amp; future collaboration session</td>
</tr>
<tr>
<td>14:50 – 15:30</td>
<td>Afternoon Break @ AI 2205</td>
</tr>
<tr>
<td>15:30</td>
<td>Car deliver to KU home</td>
</tr>
<tr>
<td>16:30</td>
<td>Depart for dinner place</td>
</tr>
<tr>
<td>18:30</td>
<td>Cruise registration</td>
</tr>
<tr>
<td>19:00 – 21:00</td>
<td>Closing dinner</td>
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Meeting Timeline – Day 3

**Wednesday, 14 November 2018 @ CP Ram, Ladlumkaew, Pathumthani and Ayutthaya**

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<tr>
<td>07:00 – 09:00</td>
<td>Depart for Plant Visit</td>
</tr>
<tr>
<td>09:00 – 11:30</td>
<td>Plant Visit @ CP Ram</td>
</tr>
<tr>
<td>11:30 – 12:20 pm</td>
<td>Depart for Lunch</td>
</tr>
<tr>
<td>12:20 pm – 13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30 – 14:30</td>
<td>Museum Visit (Chao Sam Phraya National Museum)</td>
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**Cultural Visit**

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<tr>
<td>14:30 – 16:30</td>
<td>Ayutthaya Historical Place Visit: Wat Yai-Chaimongkol, Wat Panan Choeng</td>
</tr>
<tr>
<td>16:30</td>
<td>Depart for Dinner</td>
</tr>
<tr>
<td>17:30 – 20:00</td>
<td>Dinner</td>
</tr>
<tr>
<td>21:00</td>
<td>Return to KU Home</td>
</tr>
</tbody>
</table>
AC21 Joint mini-symposium on “Agro-Industry Research for well-being”

12 -14 November 2018
Kasetsart University, Bangkok, Thailand

Abstract Section
(by order of presentation)
Incorporating the Global Food Industry Challenge ‘Profit rather than Waste’ in Trial Design and Product Development

Maricel Krügel*

1 Department of Food Science, Stellenbosch University, South Africa
* Corresponding author: maricel@sun.ac.za

Abstract

Food manufacturers are in the business of meeting the ever-changing demands of consumers as well as developing food products that are original and have the ability to increase a company’s share of a particular market. Trial Design and Product Development is a final year undergraduate module at the Department of Food Science, Stellenbosch University, South Africa. The aim of this research-based module is to allow students to gain insight into the entire food product development process. Students are exposed to Experimental Food Science and this process equip them with knowledge and skills that allow them to develop products that meet the needs of the consumer and the producer. In 2017 the students, who worked in randomly assigned groups for the entire year, had to integrate all fundamental food science and related disciplines’ principles in order to research and develop food products and suitable packaging. Each year a relevant theme coupled with a specific brief is given to the students. To address the increasing global challenge of food waste, the theme for 2017 was Profit rather than waste. Each research group had to identify and source a microbiologically good quality waste stream to incorporate into the product development process. Waste streams included, amongst others, grape pomace, bread, various vegetables, spent coffee grounds and banana peels. The student groups were well abled to developed unique products having specific nutritional claims. The More profit and less waste theme was thus successfully addressed. Through this cutting-edge approach seven new, trend-based products were developed. The products included 1) beer brewed from bread, 2) an instant butternut based noodle, with a smoked vegetable sauce, 3) a gluten-free grape pomace pretzel, 4) a selection of semi-hard handcrafted toffees from whey, 5) a gluten-free cinnamon and Rooibos tea extract flavoured bread with carrot and brown rice flour, 6) a vegetable-based baked snack and 7)
roasted coffee flavoured yoghurt with banana bran flakes. Currently, the handcrafted toffee is being further developed for commercialisation by a private investor in conjunction with the Innovation Centre of Stellenbosch University.

**Keywords:** Food waste, new product development, research-based
Geographical Indication of Indonesian Agroindustrial Products

Anggoro Cahyo Sukartiko*
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Corresponding author: cahyos@ugm.ac.id

Abstract

Various products that are registered as Geographical Indication (GI) products in Indonesia have increased rapidly over the past decade. The increase indicates the demand for the product and the need for GI’ actors to protect their products from adulteration and mislabeling efforts. This paper provides an overview of how GI as one of the voluntary standards is implemented and developed in Indonesia, including efforts to authenticate a variety of agroindustry products such as rice, coffee, cocoa, coconut sap, and snake fruit and how consumers behaved towards the standard.

Keywords: Geographical Indication, authentication, consumer behavior, voluntary standard
Technology for Sustainable Agroindustry

Nafis Khuriyati*
Department of Agroindustrial Technology, Faculty of Agricultural Technology
Gadjah Mada University
Jl. Flora No.1 Bulaksumur Yogyakarta, INDONESIA 55281
*Corresponding author: nafis.khuriyati@ugm.ac.id

Abstract

Sustainable agroindustry is an agroindustry developed by taking into account economic, social and environmental aspects. All technologies used in the process of sustainable agroindustry development are directed to meet human interests in the present and in the future. The technology used does not cause environmental degradation, is economically beneficial and is socially accepted by the community. This paper presents the technologies for making food industry in more sustainable manner which consist of sustainable product development, plant layout design, nondestructive quality evaluation, and cleaner production. How these technologies work, examples of the technology implementation for food industry, the advantages of each technology and the implementation barriers are described. Application of these technologies enable improved the agroindustry performance in terms of sustainability.

Keywords: -
Price Disparity and Distribution of Income of Agricultural Products in Indonesia: Study of Logistics Costs and Value Chain

Adi Djoko Guritno*
Department of Agroindustrial Technology, Fac. Agricultural Technology
Universitas Gadjah Mada, Indonesia
*Corresponding author: adidjoko@tip-ugm.org

Abstract

The influence of external factors in agricultural production activities (seasons, temperature, rainfall and humidity etc.) that are difficult to control often causes fluctuations in prices of agricultural products and this will trigger market uncertainty and price control that are in accordance with consumer demand. Efforts to reduce price variability from other factors can be done through logistics cost control and designing how the income distribution received by each actor along supply chain from the production farmers to the point of sales. The role of collectors and middleman in Indonesia still often occurs with the main factors of capital and transportation facilities ownership so that there is a gap in income receipts which should be minimized. This study is aimed at studying the logistic costs and price disparities of several agricultural commodities in several production areas so that suggestions can be given for improvements that are adjusted to the role of the actors in each supply chain's tier. A fair income distribution will encourage a better, transparent business pattern in the supply chain and in accordance with the respective business actors' burdens and risks. The role of government and regulators is very important, especially for: granting capital access, improving infrastructure, improving transportation efficiency and improving the organization and institutions of farmers more effectively.

Keywords: price fluctuation, price disparity, logistics costs, value chain, supply chain, fair distribution income.
Research & Development Management Investigation Review for Commodity Value Path

Krissana Treesilvattanakul*

Department of Agro-Industrial Technology, Faculty of Agro-Industry, Kasetsart University
* Corresponding author: krissana.t@ku.ac.th

Abstract

Research and development management could have an important role in choosing the appropriate path for commodity value creation. In this case, we started from the very fundamental of farm-gate commodities and explored all possible paths that the commodities have been processed, developed and marketed. The investigation extended beyond the typical uses to the innovation such as extraction and synthesis of new food ingredients. The greater technology involved was inevitably reflecting in the cost of development. On the other hand, the potential gaining prices became intuitively attractive.

Keywords: research and development, commodity, value
Correlation between Complex Index of Refraction Value of Terahertz region and wood properties measured by SilviScan

Han WANG, Satoru TSUCHIKAWA, Tetsuya INAGAKI*

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Abstract
Terahertz time-domain spectroscopy (THz-TDS), provides a new possibility for the wood industry since woods are high transparent at this frequency and THz has enough spatial resolution. By using the complex refractive index and absorption coefficient that mainly determined by density and moisture content of wood, some important qualities of wood materials can be predicted simultaneously and safely. In this study, two sugi (Cryptomeria japonica) blocks were cut out along the radial direction from same wood log. The two blocks can match by annual rings that means they have the same properties. One of them was provided to measure density, MOE and other properties by SilviScan, which is a synergistic combination of image analyzer, X ray densitometer and X ray diffractometer (FPInnovations, Canada), another was cut in 57 pieces that approximately 32 mm (L: longitudinal) ×29mm (T: tangential) ×3 mm (R: radial) as samples. After measured three-dimensional sizes of the samples, a transmission measurement through LT-plane was taken by a THz time-domain spectrometer (Tera Prospector-Kit model, Nippo Precision Co), all samples were rotated from 0° to 90° with an interval of 5° (0° and 90° are defined as the polarizations perpendicular and parallel to the grain orientation). Weights and reference signal were measured twice, before and after the THz measurement and averaged. The complex refractive index was calculated from THz frequency domain signal (0.3-0.6 THz) that Fourier transformed of the THz time domain waveforms. With multiple linear regression analysis, density and MOE were calculated by from averaged complex refractive index. The experiment result showed a high correlation between densities and MOEs measured by SilviScan and THz-TDS, that means THz-TDS is fit to estimate density and MOE of wood materials.

Keywords: SilviScan, Terahertz time-domain spectroscopy, Wood.
Comparison of Natural Wood Ash Solutions to Indigo Dyed Cotton Fabrics

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Abstract
Indigo dyed cotton fabrics were dyed with natural lye solutions in indigo dyebaths, using Sodium Hydrosulphite (Na₂S₂O₄) as a reducing agent. The natural lye solutions were prepared by dissolved wood ash of 6 different plants which are Rice Husk, Samanca Saman tree, Banana Tree, Tamarind, Cassia tree, and Para rubber tree. The pH of natural lye solutions as well as the color strength (K/S) value were investigated. It was found that the pH of each lye solution was different, range from 8.55, 10.37, 11.22, 12.84, 13.58 and 13.68 from Rice Husk, Samanca Saman, Banana, Tamarind, Cassia and Para rubber, respectively. It was showed that K/S were increased as pH of the lye solution increased ranged from 2.52, 4.14, 8.50, 9.69, 11.02 and 11.25, as Rice husk, Samanca Saman, Banana tree, Tamarind Cassia tree, and Para rubber, respectively. The results suggest that cotton dyed with indigo were showed darker color with Para rubber lye solution and Cassia lye solution which resulted from their higher pH value, respectively.

Keywords: -
Relationship of Microstructural Changes and Physical Properties of Biaxially Oriented Polylactide/Polyethylene Glycol Films

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Abstract

Currently, the environmental sustainability and microplastics problem are globally concerned; thus, bioplastic is a promising approach to replace petroleum-based plastics, especially in packaging field. Polylactide (PLA) is one of the highest potential biodegradable plastics with reliable industrial-scale production because of its high transparency and high tensile strength, similar to the performances of polystyrene and poly(ethylene terephthalate). However, brittleness and low thermal stability of PLA limit the utilization of PLA for flexible packaging. Up to the present, several studies have been reported the toughness and thermal dimensional stabilities improvement of PLA films which can be categorized into addition of nucleating agents or plasticizers, and processing conditions control. PLA blended with poly(ethylene glycol) (PEG) have been widely investigated since it can produce the clear and flexible film, as comparable to low density polyethylene film. The fact that the difference in crystallization rate of PLA and PEG and low molecular weight (MW) of PEG always lead to phase separation, resulting in poor physical properties. Therefore, the obstacle of PEG molecule movement is required. To our viewpoint, the ordered packing structure of PLA feasibly functions as barrier for retarding the mobility of small molecule. In this study, PEG with two different MW was mixed with PLA resin to produce PLA/PEG sheets, and consequently, they were biaxially stretched under systematically varied stretching temperatures and
annealing time in order to form biaxially-oriented (BO-) PLA/PEG films. It was found that high MW of PEG combining with increasing of stretching temperature and annealing time, remarkably improved the toughness of BO-PLA/PEG film. Moreover, oxygen barrier of the BO-PLA/PEG film was also enhanced according to extension of annealing time. Contrary, water vapor barrier of the BO-PLA/PEG film was mainly dependent on processing conditions. These existing performances of the BO-PLA/PEG films were directly manipulated by microstructure changes, as designed by material compositions and biaxial stretching conditions, which will be revealed in the presentation.

**Keywords:** Polylactide, Poly(ethylene glycol), biaxially oriented film, crystallization, microstructure
Heat Sealability & Food Applications of Edible Starch Films

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Abstract

The objective of this study was to compare heat sealability and mechanical properties of edible cassava (CS) and mung bean (MB) starch films. The sorbitol-plasticized films with a starch solid content of 5% were prepared by solvent casting method. Tensile strength (TS) and % elongation (%E) of MB films were superior to those of CS films as their values were ~33% and 28% higher than those of CS films, respectively. In contrast, TS of heat-sealed CS films was 3 times higher than MB films. The seal elongation at break of the heat-sealed CS and MB films, however, was 19% and 8.5%, respectively. When the films were used as Chinese steamed bun pads, they were not stick to the steamer and the films were edible. The MB films had less shrinkage and retained their original shape. Therefore, the sorbitol-plasticized MB films displayed superior qualities to the CS films.

Keywords: edible film, heat sealability, food packaging
Seaweeds-Derived Potential Functional Food Ingredients for Gut Health Benefits

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Abstract

Seaweeds are a large and diverse group of photosynthetic macro-algae found across the world’s oceans. There is a growing recognition that seaweeds are important sources of bioactive compounds with a variety of biological activities. The aim of this study was to develop efficient seaweed processing technology and assess the potential of using brown seaweed as higher-value functional foods and nutraceuticals. Polysaccharides represent the major functional components in brown seaweeds, accounting for up to 70\% of the dry weight, which may provide health benefits to humans though a prebiotic effect. The prebiotic effects of the seaweed extracts were enhanced when the enzyme-assisted extraction was used. When added to an \textit{in vitro} anaerobic fermentation system containing human fecal inocula, the extracts underwent fermentation and stimulated the production of short chain fatty acids. Furthermore, the extracts demonstrated the capacity to promote the growth of beneficial microbes. The key potential fermentable components were further fractionated in order to investigate their specific prebiotic potential. The high molecular weight polysaccharide-enriched fraction showed greater potential for improving gut health both \textit{in vitro} and \textit{in vivo}. 
studies. The industrial process simulation and economic analyses demonstrated potential commercial feasibility and profitability of the industrial production of bioactive health supplements from the brown seaweed. The key findings achieved from this work contribute to develop and expand new platform of seaweed utilisation for higher-value products, particularly to functional food and nutraceutical industries in order to serve the social demand for health awareness and support economic development.

**Keywords:** Enzyme-assisted extraction, Gut microbes; Macroalgae; Polysaccharide; Prebiotic activity; Short chain fatty acid
Anti-Inflammatory Effects of Pectin in Intestinal Macrophages

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Abstract

Dietary fiber intake has been reported to modulate various physiological functions in humans and to participate in the maintenance of a state of health, including reduction of risk of developing inflammatory diseases. This anti-inflammatory effect is at least partially due to fermentation of dietary fiber by the colonic microbiota with its metabolites. In addition it has been suggested that pectin, a water-soluble dietary fiber, directly influences host cells and thereby modulates inflammatory responses. However, the underlying mechanism by which pectin exerts its protective effect against inflammatory diseases remains unknown. Here we report the protective effect of pectin in murine model of inflammatory diseases. Citrus pectin solution was administered to male C57BL/6 mice. Thereafter, hypothermia was induced in the mice with intraperitoneal injection of lipopolysaccharide (LPS). The pectin-treated mice showed attenuation of both the decrease in rectal temperature and increase in serum IL-6 level as compared to vehicle control mice. Simultaneously, the pectin-treated mice showed reduced levels of inflammatory cytokine mRNA in Peyer’s patches and mesenteric lymph nodes, but not in the spleen. Peyer’s patch cells from the pectin-treated mice were sorted and their levels of IL-6 production on LPS stimulation were measured. The results of ex vivo analysis indicated that IL-6 secretion from CD11c+ cells was suppressed by oral administration of pectin. Furthermore, IL-6 secretion from Toll-like receptor (TLR)-activated RAW264.7 cells was suppressed by pretreatment with pectin in vitro. This suppression was observed even with degraded pectin pretreatment but not with polygalacturonic acid, as the principal constituent of the pectin backbone. These results suggest that pectin intake suppresses TLR-induced inflammatory cytokine expression in Peyer’s patch macrophages,
presumably through inhibition of TLR signaling by the pectin side chains. In view of the neutral sugar side chains of pectin are required for anti-inflammatory activity, we set out to investigate the effect of the difference of pectin side chains on dextran sulfate sodium-induced colitis in mice. We found that the clinical symptoms and tissue damage in the colon were ameliorated in mice fed with orange pectin but not with citrus pectin. Orange pectin has a higher number of neutral sugar side chains than citrus pectin, suggesting that the significance of pectin side chains for the attenuating colon inflammation. Taken together, these findings shed light on the direct anti-inflammatory effects of pectin and suggest that pectin may be used as a prophylactic dietary agent against excessive inflammatory diseases.

**Keywords:** colon, inflammation, macrophage, pectin, Peyer’s patch

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Abstract

Petai China or Lamtoro (*Leucaena leucocephala* L.), Kabau (*Archidendron bubalinum*), and Jengkol (*Pithecellobium jiringa*) were believed rich of antioxidant, have been known as stinky bean, and steamed or cooked before consumed. Recently there were no informations regarding the changes of antioxidant potential of those beans during heating processed and antioxidant compounds present in the beans. The objectives of this research were to evaluate the antioxidant potential on those beans during heating treatment and to identify the antioxidant compounds of the beans. The Lamtoro, Kabau and Jengkol were steamed up to 15 minutes. The beans were then dried and extracted simultaneously with hexane, ethyl acetate and methanol and analyzed their antioxidant potential. Identification of antioxidant compounds was conducted by LC-MS. The results showed that heating processed tent to reduce the antioxidant potential of all of beans. The methanol extracts of Lamtoro and Jengkol had higher antioxidant potential than other extracts, whereas hexane extract was observed in Kabau. Based on LC-MS that Quercetin, Kaempferol-3-O-glucuronide, Quercetin 3-O-Rhamnoside, and Quercetin 3-O-Galaktoside, and Neptein were supposed as antioxidant compounds observed on Lamtoro; Zeaxanthin, Anteraxantin, Ante...
Neoxantin, dan β-cryptoxanthin were observed in Kabau; and Neptein, catekhin dan epikatekin were found on Jengkol.

*Keywords:* -
Eukaryotic D-serine Dehydratase and its Application to D-Serine Assay

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Abstract

Recent advances in analytical techniques have demonstrated the presence of various free D-amino acids in eukaryotes including mammals. Some of these D-amino acids bear important physiological roles. For example, D-Ser serves as an endogenous co-agonist of N-methyl-D-aspartate (NMDA) receptor, which is an excitatory glutamate receptors and involved in higher functions of brain such as memory and learning. A relationship has been suggested between the behavior of D-Ser and neuronal diseases. For example, the D-Ser concentration and the relative ratio of D-Ser to total (D-plus L-) Ser concentration significantly decrease in the serum and spinal fluid of schizophrenia patients. Elevation of the D-Ser concentration is observed with the spinal cord of amyotrophic lateral sclerosis (ALS) patients. Recently, a relationship has been also reported between serum D-Ser concentrations and renal disorder. D-Ser is therefore expected to serve as a diagnostic biomarker for these diseases.

Currently D-Ser and other D-amino acids are assayed by HPLC or LC-MS methods. These methods are highly sensitive and enable the comprehensive analysis of D- and L-amino acids, but time-consuming and require expensive apparatuses and a proficient analyzer. We therefore developed a convenient and accurate enzymatic method for the D-Ser assay with D-Ser dehydratase, which we found in Saccharomyces cerevisiae. The enzyme catalyzes the dehydration of D-Ser to pyruvate and ammonia depending on pyridoxal 5’-phosphate (PLP) and zinc. The enzyme, which we named DsdSC (D-serine dehydratase of S. cerevisiae), belongs to Fold-type III PLP enzymes. DsdSC acts efficiently on D-Ser: D-Thr and D-allo-Thr also serve as substrates but inefficiently. As other D-and L-amino acids are inert as substrates, we could
construct an enzymatic assay system for D-Ser with DsdSC. In this system, pyruvate produced from D-Ser with DsdSC is determined with lactic dehydrogenase and NADH. With the method, we could measure 10 – 200 mM D-Ser. We can assay 1 – 10 mM D-Ser by determining the amount of H$_2$O$_2$ produced during the oxidation of pyruvate formed with DsdSC, in the presence of pyruvate oxidase, peroxidase, and fluorescent substrate such as Amplex Red (N-acetyl-3,7-dihydroxyphenoxazine).


Keywords: D-Ser, D-Ser dehydratase, Enzymatic assay
Indigenous Probiotic as a Starter Culture for Milk Fermentation and Its Functional Properties

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Abstract

Many lactic acid bacteria play important role in Indonesian fermented foods. Strains of Lactobacillus plantarum that have been isolated from dadih have the ability to be used as a single starter culture for milk fermentation. Dadih is a traditional fermented buffalo milk in West Sumatera, Indonesia. Lactobacillus plantarum Dad 13 showed its ability to be used as a starter culture for milk fermentation, and also met the basic requirements as a probiotic with some functional properties. We developed natural growth media for production of starter culture powder and studied its viability during storage. The freeze dried starter culture was relatively stable during storage. The indigenous probiotic starter culture was then applied for milk fermentation in industrial scale. Based on sensory test, fermented milk drink produced by L. plantarum Dad 13 was comparable to the one using commercial starter cultures. The amount of viable cells and pH of the fermented milk product were relatively stable during storage. Combination of L. plantarum Dad 13 and Streptococcus thermophilus Dad 11 for milk fermentation produced smooth semi-solid texture with pleasant acid flavor. This product was quite stable during storage until the expired day with the viable cell of 1.80 x 10⁸ CFU/mL and pH 4.0. Consumption of fermented milk drink containing L. plantarum Dad 13 for 20 days by healthy Indonesian volunteers showed that the increase in L. plantarum population in the subject’s fecal, meanwhile the population of Enterobacteriaceae, E. coli and coliform non E. coli decreased in more than 50% subject. Population of L. plantarum in subject’s fecal then decreased after their consumption was discontinued. Based on BOX AIR- PCR analysis, L. plantarum Dad 13 was
detected from volunteer's feces during consumption of fermented milk containing *L. plantarum* Dad 13. It indicated that *L. plantarum* Dad 13 could survive in the volunteer's digestive tract.

**Keywords:** -
Gut Microbiota and Probiotics: Indonesian Perspective

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Abstract

Gut microbiota, a complex and dynamic microorganism communities in colon, has become the subject of extensive research in recent year, as well as for Indonesian people. Recently, gut microbiota has also begun to be associated with various diseases, not only diseases related to the gastrointestinal tract, but also non-gastrointestinal diseases, including obesity and type II diabetes. Gut microbiota has an important role in supporting health, especially when there is a balance (normobiosis) condition. But in the condition of dysbiosis, caused by infections for example, several other diseases, may appear. So that maintain the balance of gut microbiota is necessary. What about the role of probiotics? Can probiotics be used to maintain the balance of gut microbiota and support human health? Many research should be carried out for particular strain, health benefits, and to certain people. Indonesia is known as a multi-ethnic country with different lifestyles and diets, which believed to have variations in gut microbiota. By using qPCR techniques, various types of dominant microorganisms from a number of Indonesian people living in several places (island) have been studied. In general, Indonesian people have Enterotype Prevotella, this is also supported by high carbohydrate consumption. The UGM Research Team has probiotic indigenous strains isolated from Indonesian traditional fermented foods. These strains have also been developed into various food products, as well as powder as a food supplement. The probiotic species which have been studied intensively by our research team is Lactobacillus plantarum, in fact, according to our research finding, this species has a high prevalence in the gut microbiota of Indonesian people. For Indonesian, it seems that this plantarum has a link between fermented food and gut microbiota. Some health benefits of L. plantarum strains have also been studied. Indigenous probiotic can be used
to maintain the balance of the microbiota and support the health of the Indonesian people.

*Keywords: -*
Cellulose Extraction from Sugar Cane Bagasse and Its Utilization

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Abstract

Sugarcane bagasse (SCB) is one of the abundant agro-waste from sugar industry and its utilization as a cellulose source to extract nanocellulose has attracted a lot of interests in biomaterial application. The objectives of this study are to utilize the obtained nanocellulose (NC) from SCB and incorporated with polyvinyl alcohol (PVA) in synthesis of tissue engineering scaffold. In cellulose extraction, steam explosion and enzymatic treatment were applied as an environmentally friendly process to isolate cellulose. The xylanase-treated fibers resulted in the bleaching times was reduced to 4 times, representing 44\% reduction in chemical bleaching for 1.4\% (w/v) sodium chlorite. Furthermore, acid hydrolysis utilize to nanocellulose isolation from cellulose that degraded amorphous domains and leaved cellulose crystalline regions. The effects of NC and PVA on scaffold were characterized by using scanning electron microscopy (SEM), mechanical test and cytotoxicity. The results showed that SEM images showed that increasing nanocellulose concentration coincided with the enlargement of pore size, with figures 92 and 164 µm for neat PVA and PVA/NC composite, respectively. Moreover, the increasing NC content led to an improvement in the compression modulus. The cytotoxicity test of PVA/NC scaffold was not
toxic to L929 cells compared with control groups. The results concluded that PVA/NC scaffold could be a promised candidate for tissue engineering materials.

**Keywords:** cellulose, nanocellulose, scaffold
Utilization of Natural extracts and Hydrocolloids as Functional Ingredient in Meat and Poultry Products

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Abstract

Nowadays, functional food and beverages are became interesting among various groups of consumers due to the changes of their lifestyles, eating pattern and buying behavior. The available online data and the capability of online content access are the major factor driving trend that enhance the health knowledge of consumer. Natural extracts and hydrocolloids are utmost important as functional ingredients in food industry. Natural extracts from Thai plants and herbs such as ginger, Thai hoary basil, white mugwort, citrus fruit peels, gac fruit, dragon fruits and extra virgin coconut oil were selected as a source of antioxidant and antimicrobials for the in depth study in our laboratory. The results showed the good potential for using these extracts as antioxidant and antimicrobials in meat and poultry products as detected by the shelf life extension, the stable TBA value, the low microbial counts, the high antioxidant activity and capacity and the high consumer liking score. Moreover, hydrocolloids from natural sources such as malva nut gum, Thai hoary basil seed mucilage, pectin from dragon fruit peel, chitosan and fish collagen were also selected to study of their optimal extraction condition and to characterize the in depth properties. After purification, it was applied as functional ingredients in poultry and meat products and the prominent results were obtained. With these natural extracts and hydrocolloids, the functional meat and poultry products were created. In addition, the quality enhancement of the developing functional meat and poultry products were studied using the
emerging technology such as ultrasound, thermo-sonication, microwaving heating and ohmic heating. The functional products are now further studied of their bioactivity, bioavailability and bioaccessability in the in-vitro digestion gut modeling.

**Keywords:** Natural antioxidant and extracts, Hydrocolloids, Fat reduction, Functional ingredient, Meat and poultry products
Insects: The Changing Face of Agriculture

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Abstract

The mass rearing of insects has, in recent years, gained substantial momentum. Stellenbosch University has conducted research on various aspects of insect mass rearing including their use for waste processing, sanitation, animal feed production, food production, integrated pest management and medicinal applications. Fly larvae, crickets and various roaches have the ability to convert organic waste to animal protein, lipid and chitin in a very efficient way with some species showing the potential to produce up to 15,000 times as much protein per hectare as a conventional soya field. Insect meals of various species has been shown to be an excellent protein source for production of broiler meat, eggs, abalone, tilapia, catfish and quail. For the manufacture of animal feeds bio-waste is cycled through insects in order to produce protein, fat and chitin. The use of whole insect meal in animal feeds is however limited due to the fat protein ratio. Fractioning of insects result in three products i.e. protein with an excellent amino acid composition and digestibility values in excess of 87%, lipid with high lauric acid content which makes it ideal for inclusion in the diets of young animals, and chitin which has functional properties and find application in many industries. As such the combined value of the fractioned products is more than that of the whole. Other than the nutritional value of the insects there exist a limited knowledge base on their medicinal properties. The first research at Stellenbosch University in this field pertains to the immunomodulatory properties. Poultry trials utilizing dietary Hermetia illucens and Chrysomya chloropyga larvae meal showed promising immunostimulating properties in broiler chickens and quails. Dietary larvae meal showed signs of increased humoral immune response, T lymphocyte function, serum lysozyme activity and serum α2-globulin concentrations in both. When quail were challenged with Salmonella enteritidis the dietary
inclusion of *C. chloropyga* showed antimicrobial properties through decreasing Salmonella colonization in the ceca while also increasing serum bactericidal activity against the challenge organism. These results, at this stage, appears to be dependent on the rearing substrate of the insect as well as the insect species being used. The mass rearing of insects is fast becoming an agricultural industry which needs to be recognized and developed. The contribution of this industry towards sustainable agriculture cannot be ignored and global collaboration is essential for the further development of this knowledge base.

**Keywords:** larvae meal, protein production, sustainability, resilience, mass rearing
Near Infrared Hyperspectral Imaging for Whole Grain Evaluation

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Abstract

After thousands of years of consumption, cereals (wheat, maize, rice, barley, oat, rye, sorghum, millets, triticale) remain the the most important source of energy (ca. 50%) to the majory of the world population. In the poorest countries, 80% of people’s daily sustenance comprises cereals (mainly rice, wheat, maize, sorghum and millets). People consuming whole grains as part of a healthy diet have a reduced risk of some chronic diseases. Whole grains are important sources of, apart from starch and protein, also fiber, B vitamins (thiamin, riboflavin, niacin and folate), antioxidants, and minerals (iron, magnesium, selenium). Whole grain evaluations are thus performed on a daily basis worldwide. Near infrared (NIR) spectroscopy has been extensively used for rapid, non-destructive whole grain analysis for about 30 years. Since the mid-2000s NIR hyperspectral imaging has increasingly been tested for the quantification, identification or differentiation of a range of cereal properties. Although NIR hyperspectral imaging has not been extensively implemented in the cereal industry as yet, it shows great potential for the evaluation of cereal grains. Characteristic spectra is obtained using imaging cameras due to the inherent chemical composition and physical structure of grains which will reflect, scatter, absorb or emit electromagnetic radiation from 1100 to 2500 nm. The hardness of maize kernels determines the effectiveness of the dry milling process. Differentiation between vitreous and floury endosperm in maize kernels, where a larger proportion of vitreous endosperm indicates a harder kernel, have been demonstrated using partial least squares discriminant analysis classification models. As the technique provides a chemical map, the presence of the different types of endosperms could also be visualised. Similarly the ability of NIR hyperspectral imaging to differentiate between viable (sound) and sprouted barley, wheat and sorghum was shown and visualised. Pre-harvest sprouting is a major concern for the cereal industry as it detrimentally affects malt production from barley and sorghum and the
baking quality of wheat flour. The non-destructive nature of NIR hyperspectral imaging enables time series analysis and this was demonstrated by means of the visualisation of diffusion of conditioning water into the same wheat kernels, differing in hardness, over a period of 36 h. Optimum conditioning time of different types of wheat ensure effective milling and maximum flour yield. The ability of NIR hyperspectral imaging for evaluation of whole grains is increasingly demonstrated, with new developments in equipment showing promise of industry applications to be a reality soon.

**Keywords:** whole grain, non-destructive, quality evaluations, hyperspectral imaging
A Collaborative Approach to Pre-Breeding in South Africa


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Abstract

Pre-breeding is one of the most effective ways to achieve the introduction of existing and/or novel genes and/or traits into breeding programs. Typically, material stemming from such a pre-breeding program (usually done in the public domain) is then introduced, usually, into (private/commercial) breeding programs as crossing parents and/or by direct selection. Thereby enabling breeding programs to achieve quicker, better results. The Department of Science and Technology (DST) of South Africa, Grain South Africa (GSA), the Technology and Human Resources for Industry Program (THRIP), and the Winter Cereal Trust (WCT) have invested in a rust resistance and a yield related wheat pre-breeding program at Stellenbosch University (SU) since the late 1990’s and 2014 respectively. The pre-breeding program is based on a male sterility (facilitated by a dominant sterility gene Ms3) mediated marker assisted recurrent selection scheme (MS-MARS) conceptualized, initiated, developed and implemented by the SU’s Plant Breeding Laboratory (SU-PBL). Because of the funding received from industry and close interaction with all wheat breeding programs in South Africa (including Sensako, PANNAR and the ARC-SG) the pre-breeding program of the SU-PBL has released 13 annual rust resistance nurseries by 2018 consisting of several hundreds of lines that were used as crossing parents and/or as direct introductions by recipient breeding programs. All material was accompanied by marker information compiled during the selection process to facilitate the ease of use of material, and a routine (partially subsidised) service are also offered to (and used by) recipient programs to assist with routine marker assisted selection where crosses were made with SU-PBL nursery lines.

Keywords: Wheat, MS-MARS, resistance, rust
Mycotoxins – a Persistent Food Safety Threat

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Abstract

Mycotoxins are major food and feed contaminants with an estimated 25% of the world’s crops affected by mycotoxins each year. Annual losses of around 1 billion metric tons of food and food products is estimated thereby representing a significant global food safety and security threat, especially in low and middle income countries. These toxic metabolites consistently occur in major food crops like maize, wheat and rice and have been associated with detrimental effects on human and livestock health. Mycotoxins are produced by a range of fungi of which Aspergillus, Fusarium and Penicillium species are considered amongst the most important. The major mycotoxins produced by these fungi are aflatoxins, fumonisins, deoxynivalenol, zearalenone, ochratoxin A and T-2 toxin. These mycotoxins persist throughout the production and processing value chain as they are heat-stable and not readily destroyed by manufacturing processes. Much research has been conducted on mycotoxins over the last 25 to 30 years. It's imperative to integrate the wealth of knowledge generated by international mycotoxin research towards mitigating the risk associated with the ingestion of mycotoxin-contaminated food. Therefore, the best management approach is to integrate pre- and postharvest management strategies, which have demonstrated reduced mycotoxin contamination, rather than applying isolated solutions. For preharvest management, enhanced host-plant resistance coupled with vigilant management of plant stress including appropriate chemical control and early harvesting, where possible, can reduce the risk of mycotoxin contamination. After harvest, the management of moisture levels, sorting of grain and correct storage is vital to reduce any further contamination. The employment of good agronomic practices and good manufacturing practices can ensure the production of quality food products globally.
Keywords: Mycotoxins, mycotoxigenic fungi, maize, wheat, management
Chrononutrition

Hiroaki Oda1*

1 Laboratory of Nutritional Biochemistry, Graduate School of Bioagricultural Sciences, Nagoya University, 464-8601, Japan.
*Corresponding author: hirooda@agr.nagoya-u.ac.jp

Abstract

Well-regulated eating habits are said to be important for health in both the East and the West. For example, the importance of breakfast is emphasized in ancient Japanese books. We seem to have recognized the importance of the timing of meals empirically. It is generally understood that people who work at night suffer from coronary disease and obesity more frequently. Furthermore, there is a relationship between shift work and cancer. However, the vast majority of these people are unaware that irregular eating habits are a major factor leading to health problems, because the mechanisms leading to the effects of the timing of meals on health are unclear. A major breakthrough was the discovery of the negative regulatory feedback for transcription via the binding of Clock/Bmal1 to E-box, which forms the basis of biological clocks. We revealed that irregular feeding induced disrupted-liver clock and abnormal cholesterol metabolism. Moreover, we and other researchers reported that well-regulated eating habits normalize the liver clock gene, the rhythm of CYP7A1 gene, and blood cholesterol levels through insulin secretion. Practically, time-restricted feeding ameliorated the obesity induced by a high fat diet and fatty liver induced by excess sucrose diet. I present how meal timing is important for our health and how chrononutrition works. And I review two functions of chrononutrition, A) meal timing affects our health, and B) meal timing entrains our body clock.

2) Yamajuku et al. (2012) Sci. Rep 2. 10.1038/srep00439
4) Sun et al. (2018) PLOS ONE 10.1371/journal.pone.0201261

Keywords: 1 chrono-nutrition, 2 clock gene, 3 metabolic syndrome, 4 eating habits
Real-Time and Lable-Free Observation of Living Cells in 3 Dimension using Digital Holography Microscopy

*Maturana A.D.*, Nakagawa K.*, Saigo T.*, Horimai H.*, Umezaki T.*

1 Graduate School of Bioagricultural Sciences, Nagoya University, Nagoya, Japan
2 Maxis-Shinto Inc., Nagoya, Japan
3 Department of Computer Science, Nagoya Institute of Technology, Nagoya, Japan
4 Toyohashi Univ. of Tech., Toyohashi, Japan
5 University of Tokyo, Interfaculty Initiative in Information Studies, Tokyo, Japan

* Corresponding author: maturana@agr.nagoya-u.ac.jp

Abstract

Observation of living cells with microscopes is essential and necessary to identify cells, study their functions, cellular structures, and intracellular components such as organelles. However, most popular staining and fluorescent labelling techniques targeting specific cellular molecules are invasive and might affect cells function generating artifactual observations. Therefore, non-invasive microscopy in 3 dimensions (3D), with high spatial and temporal resolution is required.

We here developed a 3D digital holography microscope to study living cells. Digital holography is a non-invasive with high temporal resolution method that enable to directly study living cells in 3D and real-time. Our 3D microscope is compact, cheap, fast and simple to use.

Here, we could observe in 3D and real-time various living single-cell micro-organisms collected in pond’s water or laboratory cultured cells such as HEK293 cells and liver cancer cells. In addition, we could monitor for the first time contractions of adult mouse cardiomyocytes in 3D and tracked the morphological change of the cell volume upon time.

Finally, we recently modified our microscope to combined the measurements of fluorescence with the 3D digital holography in order to observe intracellular organelles in higher refractive index regions of the cell.
In conclusions, we have developed a low cost but versatile 3D digital holographic microscope for various applications from field studies to laboratory observation.

**Keywords:** microscope, real-time, 3 dimensions
Ecobody Technology: a Novel Antibody Screening and Production Method of Monoclonal Antibodies by Single B-cell RT-PCR and Escherichia coli In Vivo and In Vitro Expression Systems

Hideo NAKANO*

Graduate School of Bioagricultural Sciences, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, Japan
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Abstract
We have developed a rapid and cost effective monoclonal antibody screening method from single B cells using RT-PCR and Escherichia coli cell-free protein synthesis, named Ecobody technology, which allows evaluating antibodies from animal single B cells within a two-day working. This method includes strategies to isolate B cells specifically bind to antigens from peripheral blood of immunized animal or human, and single-cell RT-PCR to generate DNA fragments of VH and VL genes, followed by cell-free protein synthesis (CFPS) for production of fragment of antigen binding (Fab). In CFPS step, we employed our original techniques; 1) ‘Zipbody’ as a modified format of Fab, in which the association of heavy and light chains is facilitated by adhesive leucine zipper peptides, fused at the C-terminus of Fab. 2) ‘N-terminal SKIK peptide tag’ that can greatly increase the expression level of proteins in E. coli. By the Ecobody technology, we have already obtained rabbit monoclonal antibodies from rabbit peripheral B cells against various antigens. For example, highly specific monoclonal antibodies for antigens Vibrio parahaemolyticus and E. coli O26 were obtained only in two working days. The anti-V. parahaemolyticus Zipbody was further produced in E. coli Shuffle T7 Express strain as an inclusion body and refolded by a conventional method, resulting in significant antigen-binding activity with a high productivity. The technology can be applied to obtain not only animal antibodies but also human antibodies. The possibilities of the new technology will be discussed.
Keywords: monoclonal antibody; cell-free protein synthesis system; single B cell; Escherichia coli expression system
AC21 Joint mini-symposium on “Agro-Industry Research for well-being”

12 -14 November 2018
Kasetsart University, Bangkok, Thailand

Curriculum Vitae Section
(by alphabetical order)
BOTES, Willem

Chair: Department of Genetics and Research Lead: National Wheat Breeding Platform
Department of Genetics
Faculty of AgriSciences, Stellenbosch University, South Africa
Tel: +27 (0) 21-808-2637 Email: wcb@sun.ac.za

Education

M.Sc. Agric (Genetics), Stellenbosch University, South Africa
B.Sc. Agric (Biochemistry, Genetics and Plantpathology), Stellenbosch University, South Africa

Honors and Awards

(2018) National Science and Technology Forum Grand Finalist (in the category Research leading to innovation by a corporate organization)
(2016) Stellenbosch University Rector’s Award for Exceptional Service
(2016) National Science and Technology Forum Grand Finalist (in the category Research leading to innovation by a corporate organization)
(2015) Stellenbosch University Rector’s Award for Exceptional Service
(2014) Stellenbosch University Rector’s Award for Exceptional Service

Research Interests

- Plant breeding; Wheat; Triticale; Rye; Wheat rust diseases

Selected Publications


CHAROENSIDDHI, Suvimol

Academic staff/ Lecturer
Department of Food Science and Technology
Faculty of Agro-Industry, Kasetsart University, Thailand
Tel: +66 (0) 9-2261-3252 Email: suvimol.ch@ku.ac.th

Education
Ph.D. (Medical Biotechnology), Flinders University, Australia
M.Sc. (Food Technology), Chulalongkorn University, Thailand
B.Sc. (Biotechnology), Mahidol University, Thailand

Honors and Awards
(2018) Vice-Chancellor’s Prize for Doctoral Thesis Excellence 2017: Outstanding academic performance in the course leading to the Doctor of Philosophy (Ph.D.)
(2016) Representative student- the Australian Society for Microbiology South Australian Branch Student Awards
(2015) 3-Minute Thesis oral presentation competition 2015 (School heat winner), Flinders University, Australia
(2015) Australian Marine Sciences Association (South Australia) Lab meet and greet Winner

Research Interest
- Food ingredients for gut health benefits
- Gastrointestinal digestibility
- Functional foods and nutraceuticals
- Dietary bioactive compounds
- Biorefinery processes

Selected Publications
GURITNO, Adi Djoko

Associate Professor
Department of Agroindustrial Technology
Faculty of Agricultural Technology, Universitas Gadjah Mada
Tel: +62 (0) 81-124-4285 Email: adidjoko@ugm.ac.id

Education
Ph.D. (Agricultural Economics and Agribusiness), Ehime University, Japan
MSIE. (Industrial Engineering), Bandung Institute of Technology, Indonesia
Ir. (Agricultural Product Processing), Universitas Gadjah Mada, Indonesia

Honors and Awards
(2018) Award for Best Lecturer of Agroindustrial Technology, Faculty of Agricultural Technology, Universitas Gadjah Mada
(2017) Award for Best of Head of Study Program in Universitas Gadjah Mada
(2013) Freezailah - ITTO Research Award: Indonesian Forest Management: A Comprehensive Study through Comments and Opinions of the People Concerned (With Special Reference to Forest Concessionaires and the Log Export Banning Policy)

Research Interest
• Supply Chain Management
• Value Chain Management
• Risk Management
• Operations Management

Selected Publications
Comparison of Fish Supply Chain from Aquaculture and Sea Catchment Areas. Journal of Service Science and Management 10 (04), 353 pp., 2017
KRÜGEL, Maricel

Lecturer
Department of Food Science
Faculty of AgriSciences, Stellenbosch University
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Education
Ph.D. (Food Science), Stellenbosch University, South Africa

Honors and Awards
(2017) Blended online development and implementation award: R5 000
(2016) Early research career bursary: R25 000
(2016–2018) Subcommittee B research fund: R70 000 pa
(2014) Best poster, ISEKI Food Conference
(2011) Highest merit: Teaching development program
(2008-2015) URF funding for research projects: R75 000 pa
(2008) 1st Prize for best poster at CPUT Research Day

Research Interest
- New product development
- Food safety - alternative technologies
- *Mycobacterium avium* subsp *paratuberculosis*
- Teaching and learning

Selected Publications


JARIyasakoolroj, Piyawanee

Lecturer
Department of Packaging and Materials Technology
Faculty of AgroIndustry, Kasetsart University
Tel: +66 (0) 8-9231-9426
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Education

M.S. - Ph.D. (Polymer Science), Chulalongkorn University, Thailand
B.Sc. (Physico-Chemical Processing Technology, Agro-industry), Kasetsart University, Thailand

Honors and Awards

(2011) The Best Poster Award from Europolymer Conference (EUPOC 2011) "Biobased Polymers and Related Biomaterials", Gargnano, Italy.

Research Interest

• Biodegradable Polymers
• Polymer Characterization
• Polymer Processing
• Polymer Structure-Properties Relation
• Polymer Crystallization Behavior

Selected Publications


KITAGUCHI, Kohji

Assistant Professor
Department of Applied Life Sciences
Faculty of Applied Biological Sciences, Gifu University
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Education
M.S. - Ph.D. (Agricultural Sciences), Graduate School of Bioagricultural Sciences, Nagoya University, Japan
B.Sc. (Agricultural Sciences), School of Agricultural Sciences, Nagoya University, Japan

Honors and Awards

Research Interest
• Modulation of immune responses by dietary ingredients
• Physiological roles of dietary fibers
• Prophylactic and therapeutic effects of dietary ingredients on allergic disorders
• Anti-inflammatory and anti-oxidant properties of foods

Selected Publications
Kitaguchi, K., Yabe, T.* Dietary fiber pectin is recognized in a structure-specific manner by intestinal cells. *Trends in Glycoscience and Glycotechnology*, in press.


KHURIYATI, Nafis

Assistant Professor
Department of Agroindustrial Technology
Faculty of Agricultural Technology, Universitas Gadjah Mada
Tel: +62 (0) 815-6847-3490 Email: afis.khuriyati@ugm.ac.id

Education

Doctor (Bioresource Production Sciences), The United Graduate School of Agricultural Sciences, Ehime University, Japan
Master (Biomechanical Systems), Faculty of Agriculture, Kochi University, Japan
B.Sc. (Agroindustrial Technology), Faculty of Agricultural Technology, Universitas Gadjah Mada, Indonesia

Honors and Awards

(2000 – 2005) MONBUKAGAKUSHO Japan Scholarship for M.S. and Doctoral Program

Research Interest

• Nondestructive Quality Testing
• Sustainable of Agroindustrial Systems
• Product Development

Selected Publications


LUMDUBWONG, Namfone

Associate Professor
Department of Food Science and Technology
Faculty of Agro-Industry, Kasetsart University
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Education
M.Sc. - Ph.D. (Food Science), Kansas State University, USA
B.Sc. (Food Science & Technology), Kasetsart University, Thailand

Research Interest
- Structure-function properties of starch
- Starch structure modifications for food and non-food applications
- Thermoplastic starch materials and packaging
- Utilization of rice for food & non-food products

Selected Publications & Patents


MANLEY, Marena

Professor
Department of Food Science
Faculty of AgriSciences, Stellenbosch University
Tel: +27 (21) 808 3511 Email: mman@sun.ac.za

Education

PhD (Near Infrared Spectroscopy), University of Plymouth, United Kingdom
MSc Agric (Food Science), University of Pretoria, South Africa
BSc Agric (Honours)(Food Science), University of Pretoria, South Africa
BSc in Food Science, Stellenbosch University, South Africa

Honors and Awards

(2015) Rector’s Award for General Performance, Stellenbosch University
(2014) South African Academy of Science and Arts, Medal of Honour of the Faculty of Natural Sciences and Technology
(2014) Rector’s Award for General Performance, Stellenbosch University
(2010) Rector’s Award for Research Excellence, Stellenbosch University

Research Interest

• Cereal chemistry and quality
• Near infrared spectroscopy applied to cereals and food
• Near infrared hyperspectral imaging applied to whole cereal grains
• X-ray micro-computed tomography applied to dough and baked products

Selected Publications


MATURANA, Andrés

Associate Professor
Laboratory of Animal Cell Physiology
Graduate School of Bioagricultural Science
Nagoya University, Japan
Tel: +81-52-789-5015 Email: maturana@agr.nagoya-u.ac.jp

Education
Ph.D. (biological Science), University of Geneva, Geneva, Switzerland

Research Interest
- Ion channels
- Intracellular Signaling
- Cardiovascular System
- Imaging

Selected Publications


NAKANO, Hideo

Professor
Department of Applied Biosciences
Graduate School of Bioagricultural Sciences, Nagoya University
Tel: +81 (0) 52-789-4142 Email: hnakano@agr.nagoya-u.ac.jp

Education
M.S. - Ph.D. (Chemical Engineering), The University of Tokyo, Japan
B.Sc. (Chemical Engineering), The University of Tokyo, Japan

Honors and Awards
(2002) Terui Award (Yong Excellent Researcher for Bioengineering) from The Society of Biotechnology, Japan
(2003) Research Encourage Prize for Fermentation and Metabolism from JBA
(2006) Research Encourage Prize from Amano Enzyme foundation

Research Interest
- Cell-free protein synthesis systems and its application
- Development of a high-throughput generation and screening of monoclonal antibody in a cell-free system.
- Development of biomolecules separation techniques: biomolecular-interaction screening method with emulsion PCR
- Bioinformatics

Selected Publications


ODA, Hiroaki

Associate Professor
Lab. Nutr. Biochem.,
Dept. Appl. Biosci., Nagoya University
Tel: +81-52-789-4124 Email: hirooda@agr.nagoya-u.ac.jp

Education

M.S. - Ph.D. (Nutritional Biochemistry), Nagoya University, Japan
B.Agr. (Nutritional Biochemistry), Nagoya University, Japan

Honors and Awards

(1995) The Young Investigator Award, Japan Society of Nutrition and Food Science
(2001) The Young Investigator Award, Japan Society for Bioscience, Biotechnology, and Agrochemistry
(2011) Oleo Science Award, Japan Oil Chemists’ Society

Research Interest

- Molecular nutrition
- Chrononutrition
- Hepatocytology
- Molecular biology
- Cell biology

Selected Publications


PIETERSE, Elsje

Senior Lecturer
Department of Animal Sciences
Faculty of AgriSciences, Stellenbosch University
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Education
PhD – Animal Sciences, Stellenbosch University, South Africa
M.Sc. – Animal Sciences, Pretoria University, South Africa
B.Sc (Agric) Animal Sciences, Pretoria University, South Africa

Honors and Awards
Innovation Africa award in collaboration with Agriprotein Pty Ltd
110% Green – Western Cape Government

Research Interest
• Animal nutrition
• Insect production

Selected Publications

https://doi:10.1002/jsfa.8860


PIRAK, Tantawan

Assistant Professor

Department of Product Development

Faculty of Agro-Industry, Kasetsart University

Tel: +66 (2) 562 5004 Email: fagitwk@ku.ac.th

Education

B.Sc. (Public Health, Food and Nutrition), Mahidol University, Thailand
Ph.D. (Food Technology), Chulalongkorn University, Thailand

Honors and Awards

2018/2019 and 2016/2017 Newton Fund Travel Grant for Ph.D. Supervisors: British Council and Thailand Research Fund

Research Interest

- Meat, and poultry product development
- Functional food product development, esp. meat and poultry based products
- Meat protein and its interaction with hydrocolloids and other natural extracts.
- Applications of chitosan and other hydrocolloids (natural and modified form) as functional ingredients in meat and poultry products.
- Bioactive peptides, functional peptides and protein hydrolysates derived from meat and poultry (meat and by-products) and their applications as functional ingredients in food, especially meat products
- Interactions of chitosan and other hydrocolloids or natural extracts in food and meat products, and its antioxidant and antimicrobial activity
- Protein-polysaccharide interaction and complexation

Selected Publications


RAHAYU, Endang Sutriswati

Professor
Department of Food and Agricultural Product Technology, 
Faculty of Agricultural Technology Universitas Gadjah Mada

Phone/Fax: +62-274-549650 Email: endangsrahayu@ugm.ac.id

Education

Undergraduate: Food and Agricultural Product Technology, Universitas Gadjah Mada (1979)
Master : Food Science and Technology, Universitas Gadjah Mada (1985)
Doctorate : Agrochemistry, The University of Tokyo, Japan (1991)

Research Interests

- Gut Microbiota, Probiotic, Lactic Acid Bacteria, Mycotoxin, Food Safety, Food Microbiology

Selected Publications


Rose, Lindy

Lecturer
Department of Plant Pathology,
Faculty of AgriSciences, Stellenbosch University, South Africa
Tel: +27 (0) 21-8089176 Email: lindym@sun.ac.za

Education
Ph.D. (Plant Pathology), Stellenbosch University, South Africa
M.Sc. (Genetics), Free State University, South Africa
B.Sc. (Biological Sciences), Free State University, South Africa

Honors and Awards
(2008 – 2010) National Research Foundation Scholarship for PhD
(2013 – 2014) National Research Foundation Sabbatical Grant

Research Interest
- Plant-microbe interactions
- Mycotoxigenic fungi associated with grain crops
- Management of mycotoxigenic fungi
- Plant breeding for disease resistance

Selected Publications


SUKARTIKO, Anggoro Cahyo

Assistant Professor
Department of Agro-Industrial Technology
Faculty of Agricultural Technology, Universitas Gadjah Mada
Tel: +62 (0) 821-345-32808 Email: cahyos@ugm.ac.id

Education

Ph.D. (Quality of Plant Products), Georg-August University Goettingen, Germany
B.Sc. - M.Sc. (Quality Control and Standardization), Universitas Gadjah Mada, Indonesia

Honors and Awards

(2009 – 2012) DAAD Scholarship for Ph.D. Program
(2007) The 3rd Best Post-Graduate Student Paper – Indonesian Association of Food Technologist

Research Interest

• Geographical Indication
• Quality Management System
• Quality Control and Standardization of Agricultural Products

Selected Publications


SUKYAI, Prakit

Assistant Professor
Department of Biotechnology
Faculty of Agro-Industry, Kasetsart University
Tel: +66 (0) 8-5917-9657 Email: fagipks@ku.ac.th

Education
B.Sc. (Biotechnology), Kasetsart University, Thailand
M.S. (Biotechnology), Kasetsart University, Thailand
Dr.nat.techn. (Food Biotechnology) Universität für Bodenkultur, Austria
Postdoctoral research associate Seoul National University, Korea

Honors and Awards
Research Work Award (Very Good) from National Research Council 2018
Excellence research activities award from Faculty of Agro-Industry 2017
Popular vote award (voted by student) from Faculty of Agro-Industry 2017

Research Interest
• The extraction of cellulose nanocrystal from sugarcane bagasse and its utilization for scaffold fabrication in various biomedical applications.
• The modification and synthesis of bacterial cellulose (nanocellulose, nanofibrils, nanocrystals and alignment).

Selected Publications


Cellulose. 3: 1757-1768. IF 3.809

SUPRIYADI, Supriyadi

Associate Professor
Department of Food and Agricultural Product Technology
Faculty of Agricultural Technology, Universitas Gadjah Mada
Yogyakarta-INDONESIA 55281.
Tel: +62 (0) 81-328-749-808 Email: suprif248@ugm.ac.id

Education:
Ph.D. (Food Flavor), Gifu University-Japan
M.S. (Food Process), Kyoto University-Japan
B.Sc. (Agricultural Product Technology), Universitas Gadjah Mada-Indonesia

Research Interest:
- Postharvest
- Tea Science
- Food Packaging and Shelf-life
- Post Harvest

Selected Publications


TREESILVATTANAKUL, Krissana

Lecturer
Department of Agro-Industrial Technology
Faculty of AgroIndustry, Kasetsart University
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Education
Ph.D. (Agricultural economics), Purdue University, USA
M.M. (Science & Technology Management), Mahidol University, Thailand
B.Sc. (Biology), Mahidol University, Thailand

Research Interest
• Renewable energy & biofuels policy analysis
• Agricultural policy and economics
• Feasibility study of innovative products and technology
• Commodity value creation alternatives

Selected Publications


UTAMI, Tyas

Assistant Professor
Department of Food and Agricultural Product Technology
Faculty of Agricultural Technology, Universitas Gadjah Mada
Tel: +62274549650 Email: tyas_utami@ugm.ac.id

Education:
PhD (Food Science and Technology), University of Reading, Reading, UK
MSc (Food and Agricultural Biotechnology), University of Reading, Reading, UK
BSc (Agricultural Product Technology), Faculty of Agricultural Technology, Universitas Gadjah Mada, Indonesia

Research Interest:
- Food Fermentation
- Lactic acid bacteria
- Probiotic

Selected Publications:


WANG, Han

Master’s second year student
System Engineering for Biological Resources
Forest and Environmental Resources Science
Graduate School of Bioagricultural Science
Nagoya University
Tel: +81 070 - 4373 - 1932  Email: wanghai_bio@yahoo.co.jp

Education

M.S. (Forest and Environmental Resources Science), Nagoya University, Japan
B.Sc. (Bioscience), Hainan University, China

Research Interest

- Wood industry
- Non-destructive wood material inspection
- Terahertz spectroscopy detection
WATCHARAPORN, Kanitta

Assistant Professor
Department of Textile Science
Faculty of AgroIndustry, Kasetsart University
Tel: +66 (2) 562-5073 Email: fagikta@ku.ac.th

Education
Ph.D. (Material Science), Chulalongkorn University, Thailand
M.S. (Textile Chemistry), Clemson University, USA

Research Interest
- Textile dyeing and color measurement
- Indigo dyeing
- Silver Nanoparticles synthesis and characterization

Selected Publications


YOSHIMURA, Tohru

Professor
Graduate School of Bioagricultural Sciences,
Nagoya University
Tel: +81 (52) 789-4132 Email: yosimura@agr.nagoya-u.ac.jp

Education
M. A. - Ph.D. (Agricultural Chemistry), Kyoto University, Japan
B.Agr. (Agricultural Chemistry), Kyoto University, Japan

Honors and Awards
(2014) Award of the Vitamin Society of Japan
(1995) The Japan Bioscience, Biotechnology and Agrochemistry Society Award for the Encouragement of Young Scientists
(1995) Morinaga Service Association Award

Research Interest
- Structure and function of enzymes
- Reaction mechanism of enzymes
- Enzymes involved in amino acid metabolism
- Metabolism and physiological roles of D-amino acids

Selected Publications


Note..........
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Note......
For AC21 Joint mini-symposium on “Agro-Industry Research for well-being”
12-14 November 2018
Kasetsart University, Bangkok, Thailand

LIST OF INVITEES

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Position</th>
<th>Organization/institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mr. Tohru Yoshimura</td>
<td>Professor</td>
<td>Nagoya University</td>
</tr>
<tr>
<td>2</td>
<td>Mr. Heido Nakano</td>
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<tr>
<td>3</td>
<td>Mr. Hiroaki Oda</td>
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</tr>
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<td>Mr. Andres Daniel Maturana</td>
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<tr>
<td>5</td>
<td>Ms. Han Wang</td>
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</tr>
<tr>
<td>6</td>
<td>Mr. Jun Murase</td>
<td>Assoc. Prof.</td>
<td>Nagoya University</td>
</tr>
<tr>
<td>7</td>
<td>Mr. Kazuhito Kawakita</td>
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<tr>
<td>8</td>
<td>Mr. Kohji Kitaguchi</td>
<td>Asst. Prof.</td>
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</tr>
<tr>
<td>9</td>
<td>Ms. Lindy Joy Rose</td>
<td>Lecturer - Department of Plant Pathology</td>
<td>Stellenbosch University</td>
</tr>
<tr>
<td>10</td>
<td>Mr. Willem Botes</td>
<td>Chair: Department of Genetics &amp; Research Lead: DST-Grain SA Wheat Breeding Platform</td>
<td>Stellenbosch University</td>
</tr>
<tr>
<td>11</td>
<td>Ms. Elsje Pieterse</td>
<td>Senior Lecturer</td>
<td>Stellenbosch University</td>
</tr>
<tr>
<td>12</td>
<td>Ms. Maricel Krugel</td>
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</tr>
<tr>
<td>13</td>
<td>Ms. Marena Marena</td>
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</tr>
<tr>
<td>14</td>
<td>Mr. Supriyadi Supriyadi</td>
<td>Lecturer</td>
<td>Gadjah Mada University</td>
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<tr>
<td>15</td>
<td>Ms. Endang Sutriswati Rahayu</td>
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<td>16</td>
<td>Ms. Nafis Khuriyati</td>
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<td>Gadjah Mada University</td>
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<tr>
<td>17</td>
<td>Mr. Anggoro Cahyo Sukartiko</td>
<td>Head of Quality Analysis and Standardization Laboratory</td>
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<tr>
<td>18</td>
<td>Mr. Adi Djoko Guritno</td>
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<td>Gadjah Mada University</td>
</tr>
<tr>
<td>19</td>
<td>Ms. Tyas Utami</td>
<td>Lecturer</td>
<td>Gadjah Mada University</td>
</tr>
<tr>
<td>20</td>
<td>Ms. Siree Chaiser</td>
<td>Vice President, Assoc. Prof.</td>
<td>Kasetsart University</td>
</tr>
<tr>
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<td>Ms. Ravipim Chavisuk</td>
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<td>Mrs. Sasitorn Tongchitpakdee</td>
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<td>23</td>
<td>Mrs. Kanitta Watcharaporn</td>
<td>Textile Science Lecturer</td>
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<td>24</td>
<td>Mr. Kitipong Rattanaporn</td>
<td>Biotechnology Lecturer</td>
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<td>Ms. Krissana Treesilvattanakul</td>
<td>Agro-Industrial Technology Lecturer</td>
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<td>Ms. Namfone Lumdubwong</td>
<td>Food Science Lecturer/Asst. Prof.</td>
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<td>Ms. Pathima Udompijitkul</td>
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<td>28</td>
<td>Mr. Prakit Sukyai</td>
<td>Biotechnology Lecturer</td>
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<td>29</td>
<td>Mrs. Tantawan Pirak</td>
<td>Product Development Lecturer</td>
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<td>Mrs. Warapa Mahakarnchanakul</td>
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<td>31</td>
<td>Ms. Wasaporn Chanput</td>
<td>Food Science Lecturer</td>
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<td>32</td>
<td>Ms. Busarin Chongcharoenyanon</td>
<td>Packaging and Materials Technology Lecturer/Asst. Prof.</td>
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<tr>
<td>33</td>
<td>Ms. Piyawanee Jariyasakoolroj</td>
<td>Packaging and Materials Technology Lecturer</td>
<td>Kasetsart University</td>
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**ATTENDANCE LIST**

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<th>No.</th>
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<tr>
<td>1</td>
<td>Nopparat Prabsangob</td>
<td>Lecturer</td>
<td>Department of product development, Faculty of Agro-industry, Kasetsart University</td>
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<tr>
<td>2</td>
<td>Islaminati Santika</td>
<td>Student</td>
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<td>Shuangshuang Guo</td>
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<td>5</td>
<td>Nathan Preteseille</td>
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<td>INMU-Mahidol</td>
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<td>6</td>
<td>Sineenart Ruanghirun</td>
<td>Student (Ph.D.)</td>
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<td>Suthatip Chusak</td>
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<td>Product Development, Faculty of agro-industry</td>
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<td>Ms. Surimol Charoensiddhi</td>
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<td>Ms. Sompid Samipan</td>
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<td>Genetic Dept. Kasetsart University</td>
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<td>Mrs. Hathairat Rimkeeree</td>
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<td>11</td>
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<td>12</td>
<td>Diem Nguyen</td>
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<td>Zulakha</td>
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<td>Miss Araya Bijaphala</td>
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<td>15</td>
<td>Mrs. Achiraya Nunes Galante</td>
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<td>Mr. Phuthai Buakham</td>
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<tr>
<td>22</td>
<td>Mrs. Kritika Saro</td>
<td>Administrative Officer</td>
<td>Faculty of Agro-Industry, Kasetsart University</td>
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