

The 3<sup>rd</sup> International Conference on Agriculture and Agro-Industry



# ICAAI2018

Food and Agriculture: Innovation and Sustainability

## Book of Abstracts



15 - 17 November 2018  
Mae Fah Luang University  
Chiang Rai, Thailand

A Celebration of the 20<sup>th</sup> Anniversary of Mae Fah Luang University

## Message from the President

I would like to congratulate the School of Agro-Industry for organizing the 3<sup>rd</sup> International Conference on Agriculture and Agro-Industry (ICAAI) during November 15-17, 2018 in Chiang Rai, Thailand with the theme “Food and Agriculture: Innovation and Sustainability”. The conference shares an insight into the recent research in food and agriculture to provide more secure and safe food; and to sustain as well as to capitalize the practical business along the food chain from farm to fork.

The year 2018 is very special for ICAAI. It is the 20<sup>th</sup> anniversary of Mae Fah Luang University, so the ICAAI 2018 provides us the opportunity to celebrate 20 years of the founding of Mae Fah Luang, as well as, the founding of School of Agro-Industry. Thus, it is my pleasure to invite you all to take part in this conference and also to celebrate 20 years of Mae Fah Luang University.

I hope that ICAAI 2018 will bring you a great opportunity for exchange of ideas and opinions and the initiation or continuation of research collaborations.

I wish the conference a great success.



(Associate Professor Dr. Vanchai Sirichana)  
President  
Mae Fah Luang University

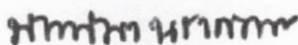
## Message from the Dean

I am honored and delighted to welcome you to the 3<sup>rd</sup> International Conference on Agriculture and Agro-Industry (ICAAI 2018) scheduled for November 15-17, 2018 in Chiang Rai, Thailand, with the theme "Food and Agriculture: Innovation and Sustainability". The ICAAI 2018 brings us a great opportunity to celebrate the 20<sup>th</sup> anniversary of Mae Fah Luang University. We are privileged to be part of these important events.

We are all aware of critical issues associated with food and agriculture. Thus, this meeting will enable you to meet and discuss the latest technology and innovation towards a future food and agriculture which is sustainable and capable of providing food and nutrition security. I hope that you will have a productive time at this conference.

Taking this opportunity also, I would like to thank the ICAAI 2018 organizing committee members for their help and hard working in organizing this successful event.

I am looking forward to meeting you all in Chiang Rai to make ICAAI 2018 a grand success.



(Assistant Professor Dr. Matchima Naradisorn)  
Acting Dean, School of Agro-Industry



## **Message from the Secretariat**

Dear participants,

The Third International Conference on Agriculture and Agro-Industry (ICAAI 2018) is organized by the School of Agro-Industry, Mae Fah Luang University (MFU), Chiang Rai, Thailand. The special event is being held from 15-17<sup>th</sup> November 2018 as part of the celebrations of MFU's 20th anniversary.

The conference encompasses a wide range of topics covering the series of food practices, including technology and innovation of the Postharvest of fresh produces, Food processing, Nutraceutical and functional food as well as Food security and sustainability. It is believed that this conference will provide great opportunity for researchers to present and publish their work, update new findings, create a network for future collaboration, and exchange culture to enlighten and motivate the way of thinking in many aspects, particularly in their research field.

The highlight of the conference is knowledge sharing from honorable speakers on a National and International level. The conference also offers the delegates a combination of oral and poster presentations, a workshop on novel technique in food processing and post conference excursion to embrace Chiang Rai, one of the most historic places in Thailand.

We would like to thank all delegates for their time and hope this conference will prove to be a worthy scientific course and provide rich remembrances that they can carry back to their home. We greatly appreciate their active participation and great support.

Lastly, we would like to convey the gratitude to the organizing committee and those who spare no effort in the preparation of the conference with most enthusiasm and dedication.

ICAAI 2018 Conference Secretariats

## Program

*The 3<sup>rd</sup> International Conference on Agriculture and Agro-Industry 2018*  
*“Food and Agriculture: Innovation and Sustainability”*  
*Mae Fah Luang University, Chiang Rai, Thailand*  
*November 15-17, 2018*

### Thursday, November 15<sup>th</sup> 2018

#### Main Session: 8:00-11:30

**Room: Kham Mok Luang**

- |               |   |
|---------------|---|
| 08:00 – 09:00 | Registration  |
| 09:00 – 09:30 | Welcome & Opening Remark  |
| 09:30 – 10:15 | Keynote Speaker I<br><b>The importance of fruits and vegetables on cardio-metabolic health</b><br>Prof. Dr. Julie A. Lovegrove<br>University of Reading, UK   |
| 10:15 – 10:45 | Coffee Break/Poster Session/Exhibition  |
| 10:45 – 11:30 | Keynote Speaker II<br><b>BIOPLASTICS for Food Packaging. Nanocellulose-based materials for innovative, performing and sustainable solutions.</b><br>Prof. Dr. Luciano Piergiovanni<br>Università degli Studi di Milano, Italy |
| 11:30 – 13:30 | Lunch/Poster Session  |

#### Concurrent Sessions: 13:00-16:30

- |               |   |
|---------------|---|
|               | Session I: Postharvest Technology & Innovation<br>(Room: Phurahong)           |
|               | Session II: Food Processing Technology & Innovation<br>(Room: Kham Mok Luang) |
|               | Session III: Nutraceutical & Functional Food<br>(Room: ME-213)                |
|               | Session IV: Food Security & Sustainability<br>(Room: ME-223)                  |
| 15:00 – 15:30 | Coffee Break/Poster Session/Exhibition  |
| 16:30 – 18:00 | Poster Session/Exhibition   |
| 18:00 – 21:00 | Welcome Reception   |

**Friday, November 16<sup>th</sup> 2018**

**Main Session: 9:00-10:30**

**Room: Kham Mok Luang**

- 09:00 – 09:45 Keynote Speaker III  
**Application of food nanotechnology to engineer novel functional ingredients: Bioavailability and efficacy improvement**  
Prof. Dr. Qinrong Huang  
Rutgers University at New Brunswick, USA
- 09:45 – 10:30 Keynote Speaker IV  
**Postharvest physiology of fruit and vegetable particularly tropical fruits**  
Prof. Dr. Jingtair Siriphanich  
Kasetsart University, Thailand
- 10:30 – 11:00 Coffee Break/Poster Session/Exhibition

**Concurrent Sessions: 11:00-12:00**

- Session I: Postharvest Technology & Innovation  
(Room: Phurahong)
- Session II: Food Processing Technology & Innovation  
(Room: Kham Mok Luang)
- Session III: Nutraceutical & Functional Food  
(Room: ME-213)
- Session IV: Food Security & Sustainability  
(Room: ME-223)
- 12:00 – 13:30 Lunch/Poster Session (Room: ME-323)

**Concurrent Sessions: 13:30-15:30**

- Session I: Postharvest Technology & Innovation  
(Room: Phurahong)
- Session II: Food Processing Technology & Innovation / Session III:  
Nutraceutical & Functional Food  
(Room: Kham Mok Luang)
- Session V: Other Related Topics  
(Room: ME-223)
- 15:30 – 16:00 Coffee Break/Poster Session/Exhibition
- 16:00 – 16:30 Closing Remarks

**Saturday, November 17<sup>th</sup> 2018**

- 08:00 – 09:00 Excursion Registration (Room: Puang-Chompoo)  
Route 1: Half-Day Tour in Chiang Rai (13:00 – 16:00)  
Route 2: One-Day Tour in Chiang Rai (08:30 – 16:00)
- 09:00 – 12:00 Workshop on High Pressure Processing (Room: S4-120)      AIMS-Mini Symposium (Room: Phurahong)



## Program of Presentations

Thursday, November 15<sup>th</sup> 2018

### Session I: Postharvest Technology & Innovation (Room: Phurahong)

**Chair:** Prof. Dr. Satoru Kondo

**Co-chair:** Assoc. Prof. Dr. Varit Srilaong

13:30-14:00 Invited speaker I

**Interaction between ABA metabolism and light quality on anthocyanin syntheses in grapes**

Prof. Dr. Satoru Kondo

Graduate School of Horticulture, Chiba university, Japan

14:00-14:20 OP01

**Effect of Ultraviolet-C (UV-C) Irradiation on Physicochemical Changes of Fresh-cut Baby Corn during Storage**

Nan Theint Ngu Lwin

14:20-14:40 OP02

**Effect of Pre-treatment by Ultraviolet-C (UV-C) Irradiation Incorporated with Hydro-cooling on Postharvest Quality of Red Hot Chili (*Capsicum annuum* L.)**

Hirun Jaruekdee

14:40-15:00 OP05

**Classification Technique using Near Infrared Spectroscopy to detect Dry Juice Sac of Mandarin**

Nadthawat Muenmanee

15:00-15:30 Coffee Break/Poster Session/Exhibition

15:30-15:50 OP06

**Effect of Polyamines Application on Reducing Chilling Injury Incidence in Okra Pod (*Abelmoschus esculentus*) Stored at Low Storage Temperature**

Surisa Phornvillay

15:50-16:10 OP07

**Antifungal Activity of Tangerine Oil Vapor Releasing from Bamboo Absorbent against Gray Mold on Banana**

Ravinun Saengwong-ngam

16:10-16:30 OP08

**Application of AVG and 1-MCP-MBs on Maintaining Postharvest Quality of Pummelo cv. "Tubtim Siam" (*Citrus maxima* Burm.)**

Paemika Promkaew

### Session II: Food Processing Technology & Innovation (Room: Kham Mok Luang)

**Chair:** Asst. Prof. Dr. Akkharawit Kanjana-Opas

**Co-chair:** Dr. Eko Hari Purmono

- 13:30-14:00 Invited speaker I  
**Agro-Industry and bioeconomy challenge**  
 Asst. Prof. Dr. Akkharawit Kanjana-Opas  
 CEO of Food Innopolis, National Science Technology and Innovation  
 Policy Office, Ministry of Science and Technology, Thailand
- 14:00-14:20 OF01  
**Release Mechanisms and Kinetics of P-Coumaric and Caffeic  
 Acids from Chitosan-Fish Gelatin Edible Active Films in Food  
 Simulant**  
 Benbettaieb N.
- 14:20-14:40 OF02  
**Maillard Reaction to Enhance Antioxidant Edible Film  
 Properties: Influence of the Temperature**  
 Kchaou H.
- 14:40-15:00 OF04  
**Effect of Broken Cell Percentage in a Powdered Citrus Peel Tissue  
 on Elution of Constituent Materials to a Solvent**  
 Yidi Cai
- 15:00-15:30 Coffee Break/Poster Session/Exhibition
- 15:30-15:50 OF05  
**Effect of Processing Step and Condition for Japanese Green Tea  
 Manufacturing Process on Structural Attribute of Tea Leaves and  
 Antioxidant Activity of Tea Infusion**  
 Wei Qin
- 15:50-16:10 OF07  
**Development of Thai Emotion Lexicon for Coffee Drinking Using  
 Word Association and Check-All-that-Apply Methods**  
 Ammaraporn Pinsuwan
- 16:10-16:30 OF09  
**Use of Orange Oil Loaded Pectin Films as Antibacterial Materials  
 for Food Packaging**  
 Tanpong Chaiwarit

### Session III: Nutraceutical & Functional Food (Room: ME-213)

**Chair:** Prof. Dr. Azhar Mat Easa

**Co-chair:** Dr. Chutamat Niwat

- 13:30-14:00 Invited speaker I  
**Sustainability-led functional food innovation**  
 Prof. Dr. Azhar Mat Easa  
 Food Technology Division, School of Industrial Technology,  
 Universiti Sains Malaysia, Malaysia
- 14:00-14:20 ON01  
**A Comparative Study of Protein Digestibility, Protein Patterns,  
 Antioxidant Activities among Raw, Boiled and Fermented Soybeans**  
 Sunantha Ketnawa



- 14:20-14:40 ON02  
**Morphological Structure and Starch Digestibility of Three Pigmented Rice Cultivars Cooked by Microwave Cooking**  
Sukanya Thuengtung
- 14:40-15:00 ON03  
**Optimization of Enzymatic Hydrolysis Condition for Producing Black Bean (*Vigna mungo*) Hydrolysate with High Antioxidant Activity**  
Naruemol Bumrungsart
- 15:00-15:30 Coffee Break/Poster Session/Exhibition  
15:30-15:50 ON04  
**Effect of Maturity on In vitro Starch Digestibility of Saba Banana [*Musa 'saba'*(*Musa acuminata* x *Musa balbisiana*)]**  
Florencio Reginio Jr.
- 15:50-16:10 ON06  
**Anti-Inflammatory, Antioxidant and Quinone Reductase Inducing Effects of Lumyai Thao (*Dimocarpus longan* var. *Obtus*) Seed Extract**  
Viriya Nitteranon
- 16:10-16:30 ON07  
**High-Theabrownins Instant Pu-Erh Tea Produced by *Aspergillus tubingensis* via Submerged Fermentation: Safety Evaluation, Physicochemical Properties and Biological Activities**  
Qiuping Wang

#### Session IV: Food Security & Sustainability (Room: ME-223)

- Chair:** Assoc. Prof. Dr. Andrea M. Liceaga  
**Co-chair:** Asst. Prof. Prinya Wongs
- 13:30-14:00 Invited speaker I  
**Evaluation of insect protein for functionality and bioactive peptides**  
Assoc. Prof. Dr. Andrea M. Liceaga  
Protein Chemistry and Bioactive Peptides Lab. Department of Food Science, Purdue University, USA
- 14:00-14:20 OS02  
**Effect of Fungal Paper Packaging Containing Orange Oil against *Aspergillus flavus* on Brown Rice**  
Sirimas Sukmas
- 14:20-14:40 OS03  
**Antifungal Activity of Hot Clove Oil Vapor against Molds on Brown Rice**  
Apiram Sinthupachee
- 14:40-15:00 OS04  
**The Effect of Released Bergamot Oil Vapor from Wood Box for Controlling *Botrytis cinerea* on Strawberry**  
Saifon Phothisuwan

- 15:00-15:30 Coffee Break/Poster Session/Exhibition
- 15:30-15:50 OS05  
**Vapor Phase Activity of Lime Oil from Coconut Absorbent against *Listeria monocytogenes* during Cold Storage**  
 Prangthip Parichanon
- 15:50-16:10 OS06  
**Potential of Natural Isolated Yeasts from Thai Vineyard and Their Ability to Growth in Limited Nitrogen Source of Wine Production**  
 Orachorn Mekkerdchoo
- 16:10-16:30 OS07  
**Intensification of Cellulolytic Hydrolysis of Rice Husk, Rice Straw, and Defatted Rice Bran by Sodium Hydroxide Pretreatment**  
 Pannapapol Jaichakan

**Friday, November 16<sup>th</sup> 2018**

**Session I: Postharvest Technology & Innovation (Room: Phurahong)**

- Chair:** Assoc. Prof. Voraphat Luckanatinvong  
**Co-chair:** Dr. Thamarath Pranamornkith
- 11:00-11:30 Invited speaker II  
**Active packaging for horticultural product from R&D to commercial**  
 Assoc. Prof. Voraphat Luckanatinvong  
 School of Agricultural Technology, Faculty of Science and Technology, Thailand
- 11:30-11:50 OP09  
**Effect of Combination Treatment of High Pressure Processing and Anti-browning Agents on Discoloration of Fresh-cut Burdock (*Arctium lappa* L.)**  
 Kanae Fujimoto
- 11:50-12:10 OP10  
**Application of Active Edible Coating from Chitosan Incorporated with Cashew (*Anacardium occidentale*) Leaf Extracts for Extending Shelf Life of Lime Fruits**  
 Mooksupang Liangpanth

**Session II: Food Processing Technology & Innovation (Room: Kham Mok Luang)**

- Chair:** Prof. Dr. Dong Sun Lee  
**Co-chair:** Dr. Wirongrong Tongdeesoontorn
- 11:00-11:30 Invited speaker II  
**Multi-perspective design of powdered infant formula packaging**  
 Prof. Dr. Dong Sun Lee  
 Department of Food Science and Biotechnology, Kyungnam University, South Korea

- 11:30-11:50 OF10  
**Effects of Drying Temperature and Time on Colour, Bioactive Compounds, and Antioxidant Activity in 'Hue Rue' Chilli Fruit (*Capsicum annuum*)**  
 Esther Yap Shiau Ping
- 11:50-12:10 OF11  
**Chemical Composition of Catfish (*Clarias macrocephalus* × *Clarias gariepinus*) Muscle as Affected by Anatomical Location**  
 Hatairad Phetsang

### Session III: Nutraceutical & Functional Food (Room: ME-213)

- Chair:** Prof. Dr. Seung-Taik Lim  
**Co-chair:** Assoc. Prof. Dr. Saroat Rawdkuen
- 11:00-11:30 Invited speaker II  
**Utilization of rice bran in biofunctional foods and cosmetics**  
 Prof. Dr. Seung-Taik Lim  
 Department of Biotechnology, College of Life Sciences and Biotechnology, Korea University, South Korea
- 11:30-11:50 ON08  
**Different Strategies to Stabilize Extremely Oxygen-Sensitive Probiotics**  
 Audrey Raise
- 11:50-12:10 ON09  
**Study on the Molecular Mechanism of Anti-inflammatory Effect of Mogroside V from *Momordica grosvenori***  
 Yong Li

### Session IV: Food Security & Sustainability (Room: ME-223)

- Chair:** Asst. Prof. Dr. Mitsuru Hamano  
**Co-chair:** Dr. Chirat Sirimuangmoon
- 11:00-11:30 Invited speaker II  
**Promoting agro-processing in rural areas, cambodia: outputs and impacts of the action researches**  
 Dr. Mitsuru Hamano  
 International Center for Agricultural Education and Research, Faculty of Agriculture, Shinshu University, Japan
- 11:30-11:50 OS08  
**Bugs as Sustainable Food Alternatives: the Italian Scenario**  
 Fabio Calzolari
- 11:50-12:10 OS09  
**Evaluation Injury Spot of *Bacillus* Spores by the Combination of Hydrostatic Pressure with Alkaline Electrolyzed Water**  
 Koki Morita



## Session I: Postharvest Technology & Innovation (Room: Phurahong)

**Chair:** Dr. Hiroaki Kitazawa

**Co-chair:** Asst. Prof. Dr. Saowapa Chaiwong

13:30-14:00 Invited speaker III

### **Trends in packaging for fresh produce in Japan**

Dr. Hiroaki Kitazawa

Food Research Institute, National Agriculture and Food Research Organization, Japan

14:00-14:20 OP11

### **Study of Antifungal Properties of Essential Oils against Plant Pathogenic Fungi (*Penicillium* sp., and *Aspergillus* sp.)**

Siriporn Luesuwan

14:20-14:40 OP12

### **Effect of Carboxymethyl Cellulose Coating Containing ZnO-Nanoparticles for Prolonging Shelf Life of Persimmon and Tomato Fruit**

Mooktida Saekow

14:40-15:00 OP13

### **Effect of Intermittent Warming on Quality of Papaya Fruit cv. Holland during Storage**

Alex B. L. Ongom

15:00-15:20 OP14

### **Effect of Hot Water Combined with UV-C Treatment on Chinese Kale (*Brassica oleracea* var. *alboglabra*) during Storage**

Chanthong Tavanikone

## Session II: Food Processing Technology & Innovation (Room: Kham Mok Luang)

**Chair:** Assoc. Prof. Dr. Daisuke Hamanaka

**Co-chair:** Dr. Rungarun Sasanatayart

13:30-14:00 Invited speaker III

### **Inactivation and injury of bacterial spores by hydrostatic high pressure and its application to food industry**

Assoc. Prof. Dr. Daisuke Hamanaka

Kagoshima University, Japan

14:00-14:20 OF15

### **Effect of Inclusion Conditions on Characteristics of Spray Dried Whey Protein Hydrolysate/ $\gamma$ -Cyclodextrin Complexes**

Sureerat Rukluarh

14:20-14:40 OF17

### **Effects of Pectin and Gellan Gum on Particles and Added Solids' Stability in Goat Milk Drinking Yogurt**

Ukrit Jaroenkietkajorn

14:40-15:00 OF47

### **A Preliminary Study of High Pressure Processing Effect on Quality Changes in 'Nanglae' Pineapple Juice during Cold Storage**

Nuntawan Chuensombat

15:00-15:20 OF50

**Effect of High Pressure Homogenization Preparation on Proportion of Nano-sized and Properties of Nanofibrillated Cellulose**

Sirada Sungsinchai

**Session III: Nutraceutical & Functional Food (Room: ME-213)**

**Chair:** Assoc. Prof. Dr. Shigeru Katayama

**Co-chair:** Assoc. Prof. Dr. Saroot Rawdkuen

13:30-14:00 Invited speaker IV

**Brain Health Benefits by Dietary Bioactive Compounds**

Assoc. Prof. Dr. Shigeru Katayama

Faculty of Agriculture, Shinshu University, Japan

14:00-14:20 ON10

**Lotus Seed Skin Proanthocyanidin Extract Exhibits Potent Antioxidant Property via Activation of Nrf2-ARE Pathway**

Tao Li

14:20-14:40 ON11

**Antibacterial Evaluation and QSAR Studies of Plant Phenolics**

Lynda Bouarab-Chibane

14:40-15:00 ON13

**Effect of Thermal Treatments on Antioxidant Properties of Pumpkin Flesh and Their Stability during *In-vitro* Gastrointestinal Digestibility**

Titikan Liangpanth

**Session V: Other Related Topics (Room: ME-223)**

**Chair:** Dr. Eko Hari Purmono

**Co-chair:** Dr. Chirat Sirimuangmoon

13:30-14:00 Invited speaker III

**Thermal Process: Optimizing the process and maximizing benefit**

Dr. Eko Hari Purmono

Department of Food Science and Technology, Bogor Agricultural University, Indonesia

14:00-14:20 OO03

**Effect of Mao (*Antidesma* sp.) Pomace on Growth Performance and Economic Evaluation of Broilers**

Kochapan Seedarak

14:20-14:40 OO04

**Status of Good Manufacturing Practices (GMP) of Small and Medium-scale 20-Liter Bottled Water Plants in Cambodia: Case Studies in 4 Provinces**

Leab Kong

14:40-15:00 OO05

**New Biomaterials Based on Pectin for the Formulation of Drug Delivery Systems**

Joaquim Mahe

## Content

Message from the President	iii
Message from the Dean	iv
Message from the Secretariat	v
Program	vi
Content	1
List of Abstracts	3
Abstract of Keynote and Invited Speakers	13
Abstract	
Session I (P) Postharvest Technology and Innovation	31
Session II (F) Food Processing and Innovation	67
Session III (N) Nutraceutical and Functional Food	117
Session IV (S) Food Security and Sustainability	147
Session V (O) Other related topics	161
ICAAI2018 Committee list	176