



Course Outline

Annual International Training Course

1. Course Title: Food Security – Agricultural and food waste utilization for food product development (Virtual Program)

2. Duration: 2 weeks (10 working days) May 15-26, 2023

3. Background:

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for their active and healthy lives (World Food Summit, 1996). The multi-dimensional nature of food security includes food availability, access, utilization, and stability.

Food stability: In order for food to be secured, population, households or individuals must have access to adequate food at all times. They should not take risks with losing access to food as a consequence of sudden shocks, an economic or climatic crisis, or cyclical events, seasonal food insecurity. The concept of stability can therefore refer to both availability and access dimensions of food security. Unfortunately, quite numbers of population in developing countries are facing the stage of food insecurity. In order to achieve success, strategies to eliminate food insecurity have to tackle these underlying causes by combining the efforts of those who work in diverse sectors such as agriculture, nutrition, health, education, social welfare, economics, public works and the environment. At the national level, this means that different ministries or departments need to combine their complementary skills and efforts in order to design and implement integrated cross-sectored initiatives which must interact and be coordinated at the policy level. At the international level, a range of specialized agencies and development organizations must work together as partners in a common effort.

Farmers and food factory have been concerned about losses since agriculture has begun. Yet the problem of how much food is lost after harvesting to processing, spoilage, insects and rodents, or to other factors takes on greater importance as world food demand grows. A great number of losses through the food supply chain generates a large number of waste and causes environmental problems seriously.

Waste utilization: Utilization of waste emerges to reduce environmental problem. As the same time, it modifies the waste from inedible to edible materials for human. It is one of the possible solutions for food security for human. However, to do so, processing technology is required to ensure waste is in the form that is safe for human consumption. Moreover, product

development technology is required to ensure waste has been used to create value and eliminate pain points for human life. In addition, packaging technology is required to maintain quality of foods during storage.

The training course on “Food Security – Agricultural and food waste utilization for food product development” is an essential tool to enhance food security for people in developing countries by creating values from wastes. Therefore, the department of Product Development would like to propose the international training course on “Food Security – Agricultural and food waste utilization for food product development” 3 years from 2023 to 2025.

This course will review the principle of waste utilization, food processing technology, product development technology, food quality, and packaging. It will discuss approaches to implement appropriate waste utilization and technologies to certain commodity. This is to enhance waste utilization in human foods to strengthen food security.

Organization/Institution

Department of Product Development, Faculty of Agro-Industry, Kasetsart University

Schedule for the Training Programme:

Food Security – Agricultural waste utilization for food product development
(Virtual Program)

May 15-26, 2023

Day/ Date	Time (Thailand time)	Content Description
Monday/ May 15, 2023		
	9.00 – 12.00	Opening ceremony Lecture - Review of food security: availability, accessibility, and utilization
	13.00 – 16.00	Presentation and Discussion - Country report
Tuesday/ May 16, 2023		
	9.00 – 12.00	Lecture - Review of agricultural and food wastes through food supply chain: availability, accessibility, and utilization
	13.00 – 16.00	Presentaion and Discussion - Virtual visiting Kasetsart experimental farms to understand on production system and wastes from agriculture
Wednesday/ May 17, 2023		
	9.00 – 12.00	Lecture - Nutrients and bioactive compounds in agricultural and food wastes
	13.0 – 16.00	Presentation and Discussion - Virtual visiting Kasetsart pilot plant to understand on production loss and waste generation
Thursday/ May 18, 2023		
	9.00 – 12.00	Lecture - Review of safety emphasize on prevention of toxin contaminated from wastes
	13.00 – 16.00	Demonstration and Discussion - How to prepare agricultural and food wastes for food ingredients

Friday/ May 19, 2023		
	9.00 – 12.00	Lecture - Processing technology for preparation of wastes for human foods.
	13.00 – 16.00	Demonstration and Discussion - How to develop human foods from wastes
Monday/ May 22, 2023		
	9.00 – 12.00	Lecture - Product development technology for value creation of agricultural and food wastes I.
	13.00 – 16.00	Workshop and Discussion: Case study I - How to implement agricultural and food wastes and process technology in human food product development
Tuesday/ May 23, 2023		
	9.00 – 12.00	Lecture - Product development technology for value creation of agricultural and food wastes II.
	13.00 – 16.00	Workshop and Discussion: Case study II - How to implement agricultural and food wastes and process technology in human food product development
Wednesday/ May 24, 2023		
	9.00 – 12.00	Lecture - Review quality measurement of human foods from wastes including chemical, physical, microbiological and consumer preference
	13.00 – 16.00	Demonstration and Discussion - How to measure quality of foods from wastes
Thursday/ May 25, 2023		
	9.00 – 12.00	Lecture - Packaging of processed foods.
	13.00 – 16.00	Presentation and Discussion - Product concept of waste utilization for food security in participants' country
Friday/ May 26, 2023		
	9.00 – 10.00	Course evaluation
	10.00 – 12.00	Question and answers
	13.00 – 16.00	Closing ceremony

4. Objectives:

The program is designed to:

- provide basic scientific knowledge of the principles and concepts of agricultural waste, food processing, packaging, product development and quality system
- enhance knowledge and understanding of how to select appropriate waste and technology to develop human foods for food security
- upgrade human capacities in transferring technology to needed party
- promote collaboration, communication and foster a professional network among participants

5. Course Contents:

The program consists of series of virtual lecture, interactive activity, and demonstration.

5.1 Lecture Outline;

- Review of food security – availability, accessibility and utilization
- Review of agricultural and food wastes through food supply chain – availability, accessibility and utilization
- Nutrients and bioactive compounds in agricultural and food wastes
- Review of safety emphasize on prevention of toxin contaminated from wastes
- Processing technology for preparation of wastes for human foods.
- Product development technology for value creation of agricultural and food wastes.
- Packaging of processed foods.
- Review quality measurement of human foods from wastes including chemical, physical, microbiological and consumer preference

5.2 Demonstration Outline;

- Practicing and demonstration of how to prepare agricultural and food wastes for food ingredients
- Practicing and demonstration of how to develop human foods from wastes
- Case studies of how to implement agricultural and food wastes and process technology in human food product development

5.3 Virtual Field Trips;

- Virtual visiting Kasetsart experimental farms to understand on production system and wastes from agriculture
- Virtual visiting Kasetsart pilot plant to understand on production loss and waste generation

5.4 Advance Assignment -Country Report;

Country report (A4 size paper 10-15 pages) should be submitted at the first day of the training course and presentation for 15-20 minutes for each country. Country report should comply of the following items:

Country Report Format

Introduction:

Name of the Training Course

Name and address of participant including email

Name of Country

Name of organization and its main task

Participant's position- role and responsibility

General information of the country:

Geographical status of the country, climate, population, official language, social, educational and economic conditions, GNP, Per-capita income, major import and export goods, natural resources and environmental situation, traditional foods etc.

Agriculture highlights:

Crops grown, areas, production, post-harvest, agriculture and economy,

Agricultural wastes:

Types, availability, and quality etc.

Food production:

Raw materials, technology, process loss and wastes from production

Food security profile:

Availability of foods, accessibility of foods, food balance and food prices

Expectations for the training course:

- Main interesting and reasons why do you pick up this training course
- Your expectations in learning from the training course
- Your anticipation in applying the knowledge and skills receives from this training course after you return to your home country

6. Participants' Criteria:

Applicants must fulfill the following requirements:

- Be nominated by their respective government of Great Mekong Subregion (Cambodia, Laos, Myanmar, Vietnam, and Thai) and Bhutan (Country within the same time zone);
- Education: equivalent to a bachelor degree of university/technical college, preferably possess B.Sc. level degree on food science, food engineering, agro-industry, agricultural science, home-economic, biotechnology, agricultural processing, agricultural product development, or have at least 5 years of related work experience;
- Language: proficiency in English (speaking, reading and writing).

7. Attendance and Evaluation

Participants who complete the training will receive a certificate based on:

- Real-time class attendance (not less than 80%)
- Interactive class participation
- Presentation and report
- Evaluation

8. Venue:

Department of Product Development,
Faculty of Agro-Industry
Kasetsart University (Bangkhen Campus)
50 Ngamwongwan Road, Chatuchak
Bangkok 10900, THAILAND

9. Expected Results:

Upon the completion of the training course the participants are expected to the following;

- Participant should understand basic scientific knowledge of the principles and concepts of waste utilization, food processing, packaging, and quality measurement
- Participants should be able to select appropriate wastes and technology to develop human foods for food security and transfer to needed party in their country
- Participants should be able to collaborate and network among their group

10. Organization/ Institution:

- **Implementing Agency;**
Department of Product Development, Faculty of Agro-Industry,
Kasetsart University, Bangkhen Campus
50 Ngamwongwan Road, Chatuchak
Bangkok 10900, THAILAND

- **Contact Person**
Associate Professor Dr. Hathairat Rimkeeree
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E-mail: fagihru@ku.ac.th

11. Expenditure/Funding:

- Thailand International Cooperation Agency (TICA)
Government Complex, Building B (South Zone), 8th Floor,
Chaengwattana Rd. Laksi District, Bangkok 10210 THAILAND
Website: <https://tica-thaigov.mfa.go.th/en/index>
Email: aitc@mfa.go.th
- Estimate Implementation cost 425,700 Baht per year