Topic : The application of a parabolic greenhouse solar dryer together with raw material preparation techniques to extend shelf-life and enhance quality of agricultural products

TICA: Thailand International Cooperation Agency is a department under the Ministry of Foreign Affairs of Thailand and a national focal point for international development cooperation with development partners and other developing countries around the world. TICA was established in 2004 to realize Thailand's aspiration to be a contributor of development cooperation. TICA's mission is to promote sustainable socio-economic development through sharing of knowledge and best practices. In response to the recent changes in the global landscape of development cooperation, especially through the concept of South-South and Triangular Cooperation, TICA continues to realign our focuses in order to deliver Thailand's commitment to be a relevant partner in global agendas including the 2030 Agenda for of Sustainable Development Goals (SDGs).	**Organisation/Institution** Department of Food Technology, Faculty of Engineering and Industrial Technology and The Office of Silpakorn University Academic Services, Silpakorn University, Nakhon Pathom, Thailand
Theme: Agriculture and Food Security **Main Goal**: To share knowledge on strengthening food security and nutrition so as to cope with an increase in global demand for food and to promote sustainable agriculture which will contribute to hunger eradication ex. access to safe and adequate food for good health and well-being. **Areas of focus:** • Sustainable agriculture for adequate, safe and nutritious food by developing agricultural infrastructure to ensure the stability of production systems and reduction of losses from post-harvest operations and food production which complies with standards and quality.	**Course Objectives** A "parabolic greenhouse solar dryer", a large-scale solar dryer with the size up to 8 m width and 20.8 m long, has been developed by Silpakorn University since 2003 and successfully implemented in Thailand for drying several products at both local enterprise and industry. This training course aims to: 1. Provide participants with knowledge and understanding of postharvest losses and deteriorations of fresh agricutural produces. 2. Provide participants with knowledge and understanding of principle of drying with an emphasis on solar drying and how a parabolic greenhouse dryer works. In addition, to share our best practices in construction and maintenance a parabolic greenhouse dryer.

	3. Provide participants with knowledge and understanding of impact of raw materials and processing on flavor, quality and shelf-life of dried agricultural products. 4. Provide participants with knowledge and understanding of the application of a parabolic greenhouse solar dryer together with raw material preparation techniques for extending shelf-life and upgrading quality of solar dried products. 5. Share experiences and key lessons learned on using the parabolic greenhouse dryer for drying of vegetable, herb, fruits, medicinal plants and other agricultural products. 6. Share ideas of local business operation with a parabolic greenhouse solar dryer 7. Introduce the sufficiency economy philosophy and its implication in sustainable local business operation
Course Contents: The program consists of series of lecture (33.5 hours), demonstration (20 hours) and virtual field trip (2 hours) **Lecture:** ● Postharvest losses and deteriorations of fresh produces, including tropical fruits, vegetables and herbs ● Principle of drying of agricultural products and drying methods for food and agricultural products in Thailand ● Solar drying, with an emphasis on a parabolic greenhouse solar dryer: Principle, construction, maintenance and its applications	**Attendance and Evaluation** Participants who complete the training will receive a certificate based on - Attendance (not less than 90%) - Participation and discussion - Evaluation **Venue:** - Online **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

• Drying of tropical fruits, vegetables, herbs and medicinal plants using a parabolic greenhouse solar dryer • Qualities and shelf-life of food and dried products • Sensory, flavor and shelf-life of dried products • Health-promoting bioactive compounds in dried food products: Fundamentals, extraction and analyses • Supply and value chain of solar dried products in Thailand • Packaging for dried products • Reinventing value chain to boost farmers' revenue share • Key successes for local business • Advancing sustainable local business operation with the sufficiency economy philosophy • Innovative drying methods **Demonstration:** • Drying of fruits, vegetables, herbs and medicinal plants using solar dryer • Quality measurements of dried products • Sensory, flavor and shelf-life of dried products • Extraction and analysis of bioactive compounds in dried products • Production of vegetable powders using solar dryer • Virtual roundtable discussion on sufficiency economy philosophy **Virtual field trip:** • Local enterprise using a parabolic greenhouse solar dryer	

Schedule for the OnlineTraining Programme

The application of a parabolic greenhouse solar dryer together with raw material preparation techniques to extend shelf-life and enhance quality of agricultural products

Date/Period/Topic	Time (Thailand time)	Content	Speaker	Note
Day 1 :				
Mon. April 24, 2023	12.00 – 12.30	Online registration		
	12.30 – 13.00	Opening ceremony and welcome address	President of Silpakorn University Dean of Faculty of Engineering and Industrial Technology, Silpakorn University	
	13.00 – 14.00	**Lecture 1**: Postharvest losses and deteriorations of fresh agricultural produces related to their shelf-life (Part 1)	Asst. Prof. Dr. Busarakorn Mahayothee	
	14.00 – 14.15	Take a break		
	14.15 – 15.15	**Lecture 1**: Postharvest losses and deteriorations of fresh agricultural produces related to their shelf-life (Part 2 – Microbial deterioration)	Asst. Prof. Dr. Pornsri Charoenpanich	
	15.15 – 16.45	**Lecture 2**: Drying methods for food and agricultural products in Thailand	Asst. Prof. Dr. Busarakorn Mahayothee	
Day 2 :				
Tue. April 25, 2023	12.00 – 13.30	**Lecture 3**: Principle of drying of agricultural products	Dr. Sarawut Phupaichitkun	
	13.30 – 13.45	Take a break		
	13.45 – 15.15	**Lecture 4**: Solar drying, with an emphasis on a parabolic greenhouse solar dryer: Principle,	Prof. Dr. Serm Janjai	

Date/Period/Topic	Time (Thailand time)	Content	Speaker	Note
		construction, maintenance and its applications		
	15.15 – 16.45	**Lecture 5**: Drying of tomato using a parabolic greenhouse solar dryer	Dr. Parika Rungpichayapichet	
Day 3 :				
Wed. April 26, 2023	12.00 – 14.00	**Lecture 6:** Drying of tropical fruits using a solar dryer	Asst. Prof. Dr. Busarakorn Mahayothee	
	14.00 – 14.15	Take a break		
	14.15 – 15.15	**Lecture 6 (Cont.):** Drying of tropical fruits using a solar dryer (Cont.)	Asst. Prof. Dr. Busarakorn Mahayothee	
	15.15 – 16.45	**Demonstration 1:** How to measure the quality of dried products	Dr. Parika Rungpichayapichet Mr. Chatchai Watthanaphairoj	
Day 4 :				
Thu. April 27, 2023	12.00 – 13.00	**Lecture 7**: Production of osmotic dehydrated fruits using a solar dryer and a tray dryer	Asst. Prof. Dr. Busarakorn Mahayothee	
	13.00 – 14.00	**Lecture 8**: The sensory quality of dried and other food products	Asst. Prof. Dr. Parinda Penroj	
	14.00 – 14.15	Take a break		
	14.15 – 16.45	**Demonstration 2:** Production of osmotic dehydrated fruits using a solar dryer and a tray dryer	Asst. Prof. Dr. Busarakorn Mahayothee Miss Orawan Pumeeako	
Day 5 :				
Fri. April 28, 2023	12.00 – 13.30	**Lecture 9**: Health-promoting bioactive compounds in dried food products	Assoc. Prof. Dr. Pramote Khuwijitjaru	

Date/Period/Topic	Time (Thailand time)	Content	Speaker	Note
	13.30 – 13.45	Take a break		
	13.45 – 14.45	**Lecture 10:** Extraction and analysis of bioactive compounds from fresh and dried food products	Assoc. Prof. Dr. Pramote Khuwijitjaru	
	14.45 – 15.45	**Demonstration 3:** Analysis of bioactive compounds in fresh and dried food products using destructive methods	Assoc. Prof. Dr. Pramote Khuwijitjaru Dr. Khwanjai Klinchongkon	
	15.45 -16.45	**Demonstration 4:** Analysis of bioactive compounds in fresh and dried food products using non-destructive methods	Dr. Parika Rungpichayapichet Dr. Khwanjai Klinchongkon	
Day 6 :				
Mon. May 1, 2023	12.00 – 14.00	**Lecture 11:** Drying of vegetables, herbs and medicinal plants using a parabolic greenhouse solar dryer	Asst. Prof. Dr. Busarakorn Mahayothee	
	14.00 – 14.15	Take a break		
	14.15 - 15.15	**Demonstration 5:** Production of vegetables powder using a parabolic greenhouse solar dryer	Dr. Parika Rungpichayapichet Miss Kanokporn Ponmana	
	15.15 - 16.45	**Demonstration 6:** Drying of herbs and medicinal plants for herbal tea production	Asst. Prof. Dr. Busarakorn Mahayothee Mr. Chatchai Watthanaphairoj	
Day 7 :				
Tue. May 2, 2023	12.00 – 13.30	**Lecture 12**: Shelf-life of food products	Asst. Prof. Dr. Prasong Siriwongwilaichat	
	13.30 – 13.45	Take a break		

Date/Period/Topic	Time (Thailand time)	Content	Speaker	Note
	13.45 – 15.15	**Lecture 13:** Impact of raw materials and processing on flavor and shelf-life of dried and other food products	Asst. Prof. Dr. Suched Samuhasaneetoo	
	15.15 – 16.45	**Demonstration 7:** Sensory, flavor and shelf-life of dried products	Asst. Prof. Dr. Suched Samuhasaneetoo Miss Piyachat Chai-uea	
Day 8 :				
Wed. May 3, 2023	12.00 – 13.30	**Lecture 14:** Packaging for dried products	Asst. Prof. Dr. Doungjai Thirathumthavorn	
	13.30 – 13.45	Take a break		
	13.45 – 14.45	**Lecture 15:** Supply and value chain of solar dried products in Thailand	Asst. Prof. Dr. Kanokwan Kingphadung	
	14.45 – 16.45	**Virtual field trip 1:** Local enterprise using a parabolic greenhouse solar dryer	Asst. Prof. Dr. Busarakorn Mahayothee Dr. Parika Rungpichayapichet	
Day 9 :				
Thu. May 4, 2023	12.00 – 13.30	**Lecture 16:** Reinventing value chain to boost farmers' revenue share	Asst. Prof. Dr. Bhundit Innawong	
	13.30 – 13.45	Take a break		
	13.45 – 16.45	**Lecture 17:** Key successes for local business	Asst. Prof. Dr. Bhundit Innawong	
Day 10 :				
Fri. May 5, 2023	12.00 – 12.30	**Lecture 18:** Advancing sustainable local business operation with the sufficiency economy philosophy Part I: The sufficiency economy philosophy	Dr. Sukit Kanjina Department of Agricultural Economy and Development,	

Date/Period/Topic	Time (Thailand time)	Content	Speaker	Note
			Faculty of Agriculture, Chiang Mai University, Thailand	
	12.30 – 14.00	**Demonstration 8 :** Part II: Virtual roundtable discussion on "Advancing sustainable local business operation with the sufficiency economy philosophy: Business planning and accounting	Asst. Prof. Dr. Busarakorn Mahayothee (Moderator) Dr. Sukit Kanjina and invited speakers (2)	
	14.00 -14.15	Take a break		
	14.15 – 15.15	**Lecture 19:** Innovative drying methods	Asst. Prof. Dr.Touchpong Choosri	
	15.15 -16.15	**Lecture 20:** Summary	Assoc. Prof. Dr. Pramote Khuwijitjaru	
	16.15 – 16.45	Closing ceremony and certificate presentation	Dean of Faculty of Engineering and Industrial Technology	

***Schedule is subject to change as appropriate**