

EFFORTS IN THAILAND FOR VALUE CHAIN ESTABLISHMENT AND INTERNATIONAL COLLABORATION

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Patcharee Tungtrakul was born in Bangkok, Thailand. She completed her MSc in Food Science and Technology at Kasetsart University, Thailand in 1987, then started to work as researcher of Institute of Food Research and Product Development (IFRPD), Kasetsart University. She was awarded by United Nations University – Kirin fellowship programme in 1996, and stayed at National Food Research Institute, Japan to practice in cereal processing and evaluation for a year. After the returning, she actively joined various domestic and international research collaborative projects relating rice quality and utilization, notably with Japan International Research Center for Agricultural Sciences as a head of Department of Food Chemistry and Physics. She is a well-known exponent of rice quality and products research in Thailand. Currently, she is Director of IFRPD, Kasetsart University from 2009.

ABSTRACTS

Recent economic growth in non-agricultural sectors over past decades has reduced the relative importance of agriculture in gross domestic product (GDP) and export earnings. However, agriculture remains a significant economic activity in rural areas. Thailand has been aiming to become the “Kitchen of the World”, the state policy promoting utilization of Thai agricultural resources and strategic location combined with R&D. Since 1968, the Institute of Food Research and Product Development (IFRPD), a public research institute, has been conducting R&D on food value chain and provides technical assistance, including consultancy services in food production, establishment of small and medium sized factories, and technical training for the public sector and local community, for the improvement of the food industry. Over the past 40-plus years, IFRPD’s activities, which are aimed at strengthening the Thai food industry and are currently following the policy of promoting the country as the “Kitchen of the World”, will be presented. We strive for excellence as a food research and development institution and as part of the national food industry. In order to meet global demand for standard quality and consumer safety in food, we adhere to international quality standards as required. We also promote the Thai food industry, especially its export products. Collaboration through networks among government, food industry, and consumers is critical in ensuring the delivery of safe, healthy, and nutritious food. Advances in science and technology offer many potential benefits in food production and distribution, which are of considerable influence in the last stage of the food value chain. An example of international collaboration to maintain traditional food industry and culture will be given.

KEYWORDS

food value chain, international collaboration



Effort in Thailand for Value Chain Establishment and International Collaboration

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IFPRD consists 4 Research Divisions and 2 GMP Certified Pilot Plants

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Emerging food innovation & technology in Thailand: Convenience and Healthy



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Emerging food innovation & technology in Thailand: Convenience and Healthy


- Processing
 - Extruded food products: snacks, breakfast cereal, instant drink
 - Dried foods
 - Frozen/chilled foods
 - Non-thermal process

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Emerging food innovation & technology in Thailand: Functional Foods

- Natural
 - Natural sources
 - Gluten-free, Chemicals-free
- Healthy products
 - Low fat, low sugar, low calories
 - Low salt
 - Diabetic control products
 - Healthy GI products
- Organic

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Pilot Plant 1



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Pilot Plant 2




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Food quality assurance center

IEC/ISO 17025 

- Certification of Food Products for Export
- Certification for Thai FDA Registration
- Functional components
- Nutritional and Food Safety Evaluation
- Thermal Process Evaluation



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Food Allergen Analysis Laboratory

IFRPD - MORINAGA RESEARCH COLLABORATION ON FOOD ALLERGEN Supported by STAFF, JAPAN

1. Food Allergen Analysis Service
 - Egg, Milk, Peanut, Wheat, Seafood, Gluten
2. ELISA Kit Production
 - Egg, Milk, Peanut, Wheat
3. ELISA Kit Development for Coconut Allergy
4. Supporting Food Allergen Management of Thai Food Industry for Gluten free products, e.g. rice noodles
5. Establishing Food Allergen Website for Consumers
<http://www.ifrpd-foodallergy.com>





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IFRPD: Public Private Partnership Initiative

SERVICE OUTPUT for FOOD INDUSTRIES



RDI support & RDI capacity building for Thai Food Industry

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IFRPD resources ↔ Domestic & International partners

- Infrastructure
- 52 Researchers
- Technical services
- Food quality assurance
- Technical advisor
- Training course

Food Value Chain [post-farm gate]

- Raw material Quality
- Post-harvest
- Food Processing
- Food Safety
- Value addition
- Sensory evaluation and shelf life study

Strengthen Local Industry and Agriculture

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IFRPD & JIRCAS have continued collaborative projects "more than 20 years"

Historical collaborations on various topics were implemented "around food value chain"

- Prevention of Postharvest Loss of Staple Cereals
- Exploring Functionality of Thai Indigenous Plants
- Development of Functional Foods
- Upgrading Traditional Fermented Products
- Advanced Application of Food Resources in Asia
- etc.

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Rice – The World’s Most Important Crop

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Value Addition of Rice

Branding

- Q (Food Safety)
- GI (Geographical)

Support Technology for rice products

- **GABA Rice**
- Rice “by-products”
- Product diversification

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Germinated and GABA Rice

49 products
26 producers
19 provinces
In Year 2005

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Indigenous Plants in Thailand

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Antimutagenicity

ชนิดผักพื้นบ้านที่มีฤทธิ์ต้านการกลายพันธุ์สูง

Group	ED90 (µL/plate)
A	< 5
B	5-50
C	> 50

ED90: < 5 µL/plate (0.1 mg of dry plant material equivalent)
ED90: 5-50 µL/plate
ED90: > 50 µL/plate

Nakahara, Trakoontivakorn et al., J Agric Food Chem. 2002;50:4796-4802

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ผลิตภัณฑ์ข้าวแคงทอดกึ่งสำเร็จรูป 4 ชนิด

ข้าวแคงเหลือง ข้าวแคงดำ ข้าวหมก ข้าวแคงเขียวหวาน

ข้าวหมกแห้ง (V-bite rice)
ข้าวหน้าหมก (V-like rice)

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Improvement of technology in Thua-Nao production

- Pure cultures in thua-nao fermentation has not only improved process efficiency
- but also improved product quality and consistency
- *B. subtilis* N-8 (1% v/w) could effectively be used as inoculum and fermentation would be accomplished within 48 hrs or less

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Production of Thua-Nao

- History, came from Thai-Yai (Chan, Myanmar) to the North part of Thailand
- Consumed in
 - Mae Hong Son
 - Chiang Mai
 - Lamphun
 - Lampang



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Production of Thua-Nao

- Thua-nao is an inexpensive food
 - But high-protein content
 - Easily produced and properly prepared



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Using starter culture for fermented rice noodle "Kanom jeen"

- Reducing the spoilage losses
- Constancy the fermentation process and quality of product
- Improving the physical and chemical properties of fermented rice noodle

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**IFRPD...
As R&D and Innovation (RDI) center**

Linkages with food industries (multinational corporates and Thai SMEs)

- ▶ **Morinaga Partner for Food Allergen Test Kit**
- ▶ **Research Incubators for Food SMEs**
- ▶ **Otagai-sama Project from Niigata Pref, Japan**
- ▶ **Networking on Food Security, Food Safety and Nutritional Security in GMS (focusing on Glutinous Rice, Good Agricultural Practice and Food Quality Assurance)**

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As partner of Morinaga on Food Allergen Test Kit

IFRPD
Morinaga Bio-Science Co., Ltd.
MBST
Morinaga Institute of Biological Science Inc. 70% IFRPD 30%

As a part of public KU infrastructure, IFRPD supporting Japanese company, Thai Food Industry and Consumers

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**MOU
KU and
Morinaga Institute of
Biological Science, Inc.
July 11 ,2013**

Opening ceremony of MBST on Dec 12 , 2013

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**Thai-Japan Otagai-sama Project ...
"Rice Valley" Forum**
Niigata University and IFRPD act as
Management & Preparedness Organization (CMPO)

May 7, 2013, KU

May 29, 2013, Tokyo

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**Collaboration Network on Glutinous rice in
GMS (Greater Mekong Sub-region)**

- ➔ Kasetart University
- ➔ SVITA Foundation
- ➔ Federation of the Quang Tri Union of Science and Technology Association, Vietnam
- ➔ Thasano Rice Research and Seed Multiplication, Ban Thasano, Savannakhet, Lao PDR
- ➔ Savannakhet University, Savannakhet, Lao PDR

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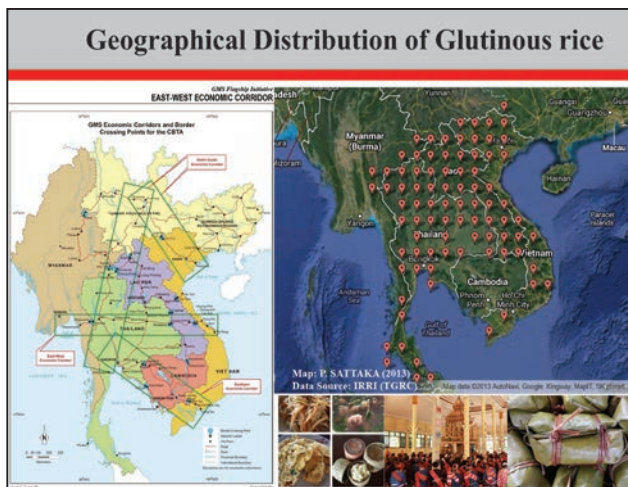
Geographical Distribution of Glutinous rice

Frequency of distribution based on sources germplasm

No.	Source country	Total	No.	Source country	Total
1	LAO PDR	2470	21	SENEGAL	2
2	THAILAND	1289	22	TANZANIA	2
3	INDONESIA	529	23	TURKEY	2
4	CHINA	374	24	BURUNDI	1
5	PHILIPPINES	340	25	COLOMBIA	1
6	INDIA	333	26	ETHIOPIA	1
7	VIETNAM	273	27	GEORGIA	1
8	MYANMAR	216	28	GUINEA	1
9	CAMBODIA	180	29	GUINEA-BISSAU	1
10	JAPAN	123	30	GUYANA	1
11	MALAYSIA	98	31	IRAN	1
12	SOUTH KOREA	97	32	NORTH KOREA	1
13	TAIWAN	74	33	PAKISTAN	1
14	NEPAL	30	34	RUSSIAN FEDERATION	1
15	BANGLADESH	22	35	SURINAME	1
16	SRI LANKA	15	36	UZBEKISTAN	1
17	BRUNEI DARUSSALAM	14	37	VENEZUELA	1
18	BRAZIL	12		UNKNOWN	7
19	UNITED STATES	12			
20	HUNGARY	2			
				TOTAL	6,530*

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สืบมหาวิทยาลัยการเกษตรเพื่อการพัฒนาที่ยั่งยืนและความปลอดภัยทางอาหาร ครั้งที่ 2 ณ มหาวิทยาลัยสุโขทัยและสะทนต์ สาธารณรัฐประชาธิปไตยประชาชนลาว (12 กุมภาพันธ์ 2558) ตั้งห้องปฏิบัติการวิเคราะห์คุณภาพข้าวเหนียว ณ มหาวิทยาลัยสุโขทัยและสะทนต์ สาธารณรัฐประชาธิปไตยประชาชนลาว

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The 1st Ag-Food GMS conference 2014 Towards SAFE GMS

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IFRPD aims to be R&D and Innovation Hub for ASEAN Food Value Chain

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