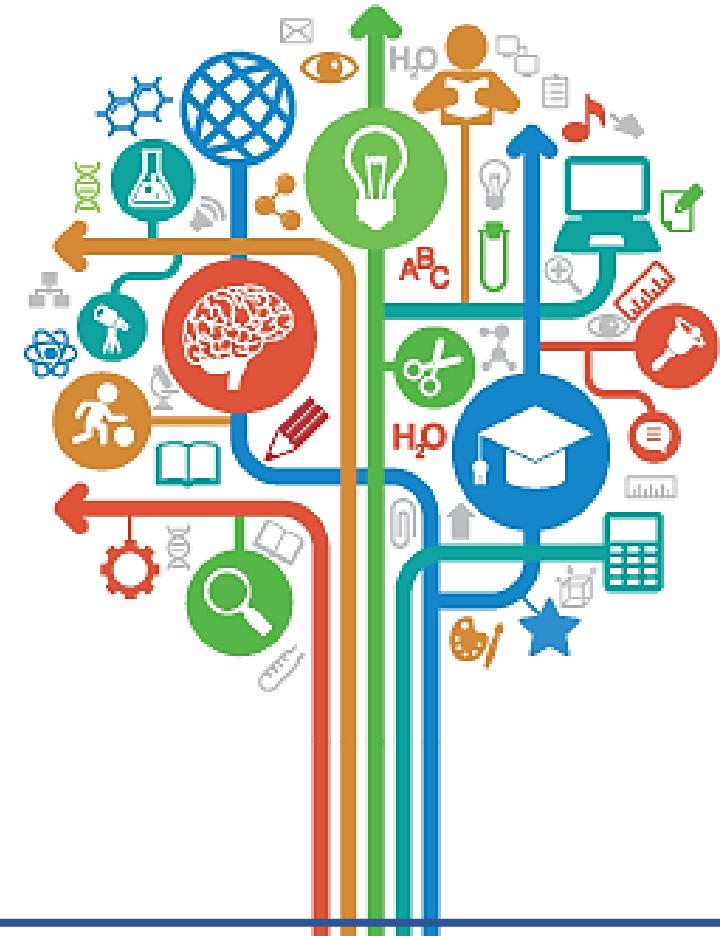


# FOOD FOR MANKIND



DR. PRAKIT SUKYAI

# DEPARTMENT OF BIOTECHNOLOGY FACULTY OF AGRO-INDUSTRY

# World today

---

World population in 2015 : 7 billion

**Some 805 million people** in the world do not have enough food to lead a healthy active life. That's about one in nine people on earth.

Everyone has the right to be free from hunger. It is the most fundamental and enabling human right of them all.



# World today

---

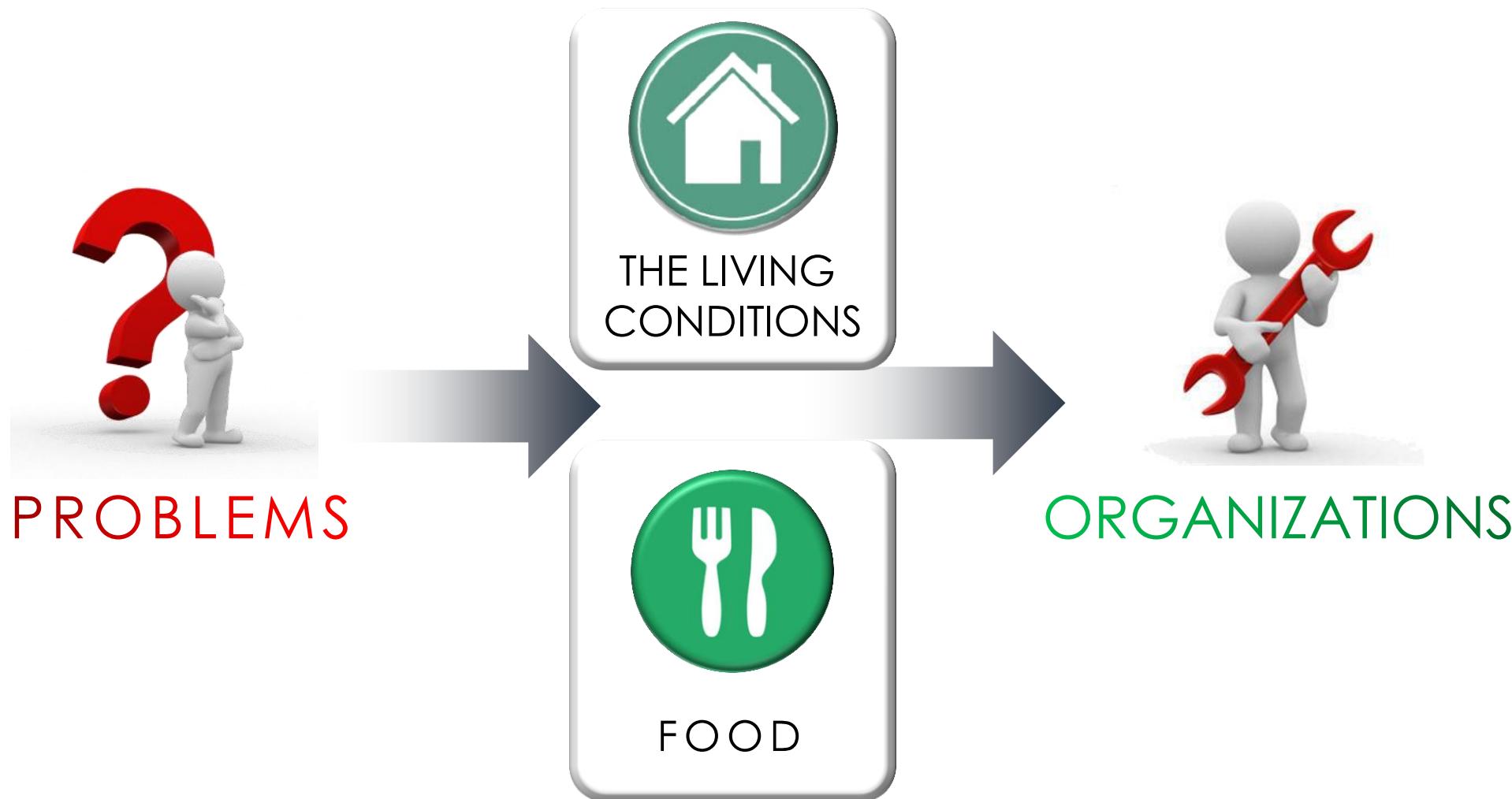
**Hunger** kills more people every year  
than **AIDS, malaria & tuberculosis** combined.



?????????????

# ORGANIZATIONS that related to food production for mankind

---



# FAO : FOOD AND AGRICULTURE ORGANIZATION

---



The eradication of hunger, food insecurity and malnutrition



The elimination of poverty and the driving forward of economic and social progress for all



The sustainable management and utilization of natural resources, including water, air, climate and genetic resources for the benefit of present and future generations



# FAO: MEMBERS 194 Countries

---



# FAO: MEMBERS 194 Countries

---

## SPECIAL PROGRAM FOR FOOD SECURITY: SPFS



- AIMS:**
- TO REDUCE HUNGER RAPIDLY
  - SUSTAINABLY BY INCREASING PRODUCTION AND AVAIABLE OF FOOD WHERE IT IS MOST NEEDED



- TARGETS:**
- THE LOW-INCOME FOOD-DEFICT COUNTRIES (LIFDCs)

Source: <http://www.fao.org/focus/e/specpr/SProHm-e.htm>

# FAO: SPFS

---

- focuses on areas with high agricultural potential where gains could be realistically expected
- concentrates on staple foods that represent the foundation for food security and an adequate diet
- employs proven technologies such as improved crop varieties and low-cost irrigation and drainage systems
- promotes participatory approaches to avoid the exclusion of any social group or the creation of inequalities
- provides an opportunity for increased South-South cooperation
- links FAO's field activities around the program and the key objective of food security

Source: <http://www.fao.org/focus/e/specpr/SProHm-e.htm>

# COLLABORATION BETWEEN FAO & THAILAND

---

- Development of fruits and vegetables
- sustainable Agriculture
- Food safety policy
- Training sessions or projects related to neighboring Mekong
- Accerelated Natural Regeneration ( ANR) :
- The Forest Restoration Research Unit (FORRU-CMU), Chiang Mai University
- Bee keeping in Asia
- Dairy Development in ASEAN
- Silk Center at Chumporn



عربي 中文 english français español  
FAO Country Profiles and Mapping Information System



Home  
→ Select a country

## Thailand

- FAO's fields of expertise
  - General Information
  - Sustainable Development
  - Economic situation
  - Agriculture sector
  - Forestry sector
  - Fishery sector
  - Technical Cooperation

## FAO's priority areas

- Direct access Information on:
  - :: Projects
  - :: External Trade



## Thailand - Fishery sector

[Print](#) [Email to a friend](#)

### Links to other FAO Country Information Systems and Country Profiles:

Fishery Country Profile - FAO's Fisheries Department prepares and publishes Fishery Country Profiles (FCP). Each FCP summarizes the Department's assessment of activities and trends in fisheries and aquaculture for the country concerned.

Information on fisheries management in the country

### Publications:

- A bibliography of Clarias (family Claridae) in Thailand
- A handbook of diseases of cultured Clarias (Pla Duk) in Thailand
- A management perspective on stress and infectious diseases in Clarias farming
- Acute toxicities of ammonia and nitrite to Clarias batrachus and their interaction to chlorides
- An assessment of the performance of Macrobrachium rosenbergii fed simple non-vitamin-supplemented pelleted diets
- An improved technique for decapsulation and preservation of Artemia cysts (brine shrimp eggs) developed at the Chachoengsao Fisheries Station
- Application of low-cost filtration systems to freshwater prawn culture in Thailand
- Aquaculture development and coordination programme. Outline Research Programmes for the Regional Aquaculture Lead Centres in Asia - Parts.1 and 2
- Assessment of a vitamin and mineral premix in an artificial feed for pla duk cui (Clarias macrocephalus) fry
- Bay Brand Artemia (an account of a 1971 visit to San Francisco), (California)
- Brine shrimp (Artemia salina) inoculation in tropical salt ponds: a preliminary guide for use in Thailand
- Collecting Clarias fry from natural waters
- Community-based Fisheries Management in Phang-nga Bay, Thailand - BOBP/REP/78
- Comparison of the effects of fresh fish and pelleted diets in Clarias grow-out operations
- Consultant report on small scale irrigation facilities, fish ponds and feeder roads
- Cysts production of Artemia salina in salt ponds in Thailand
- Dealing With Fishery Harbour Pollution - The Phuket Experience - BOBP/WP/93



# ORGANIZATIONS

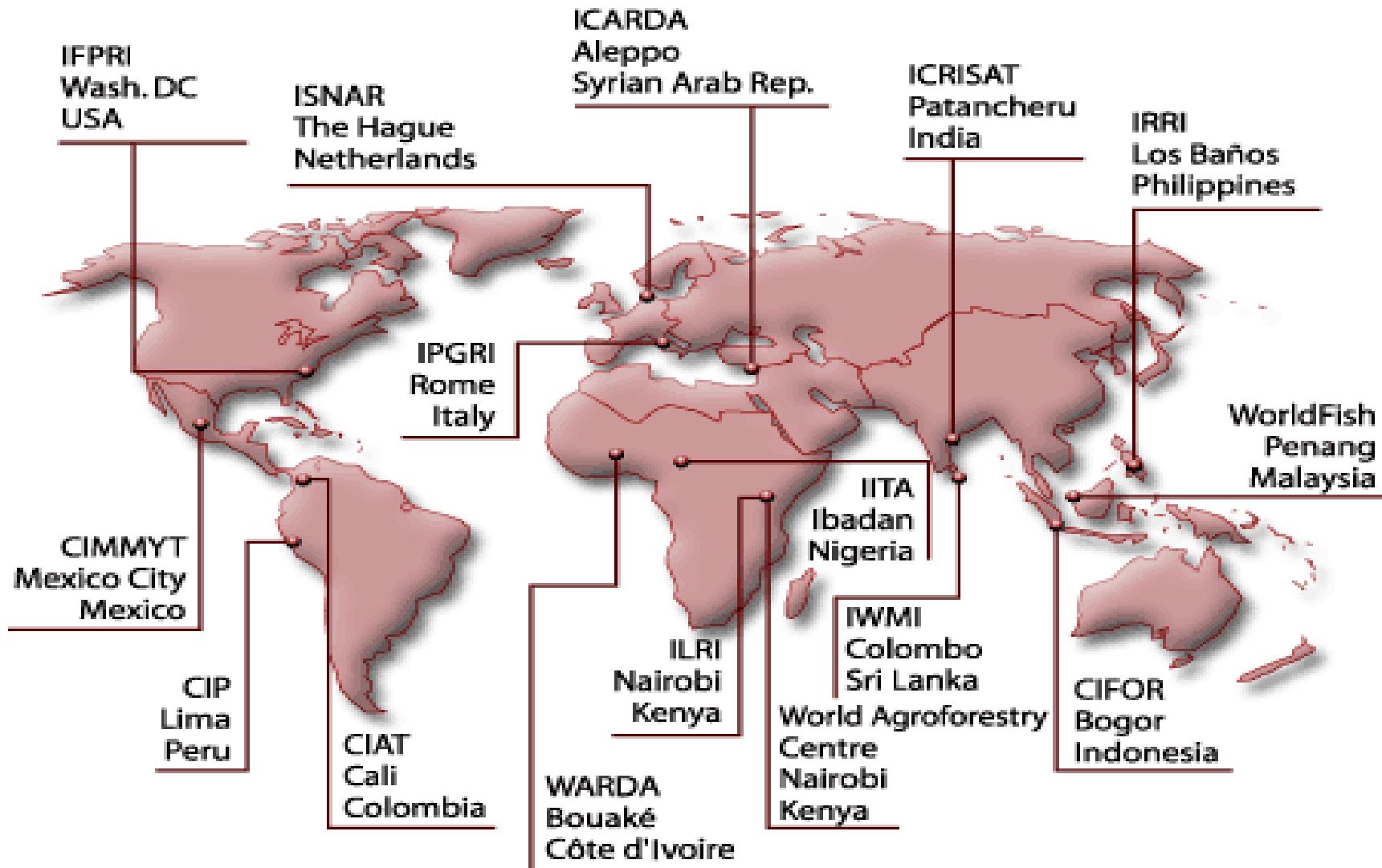
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International Center for Tropical Agriculture



# Organizations



# IRRI (International Rice Research Institute)

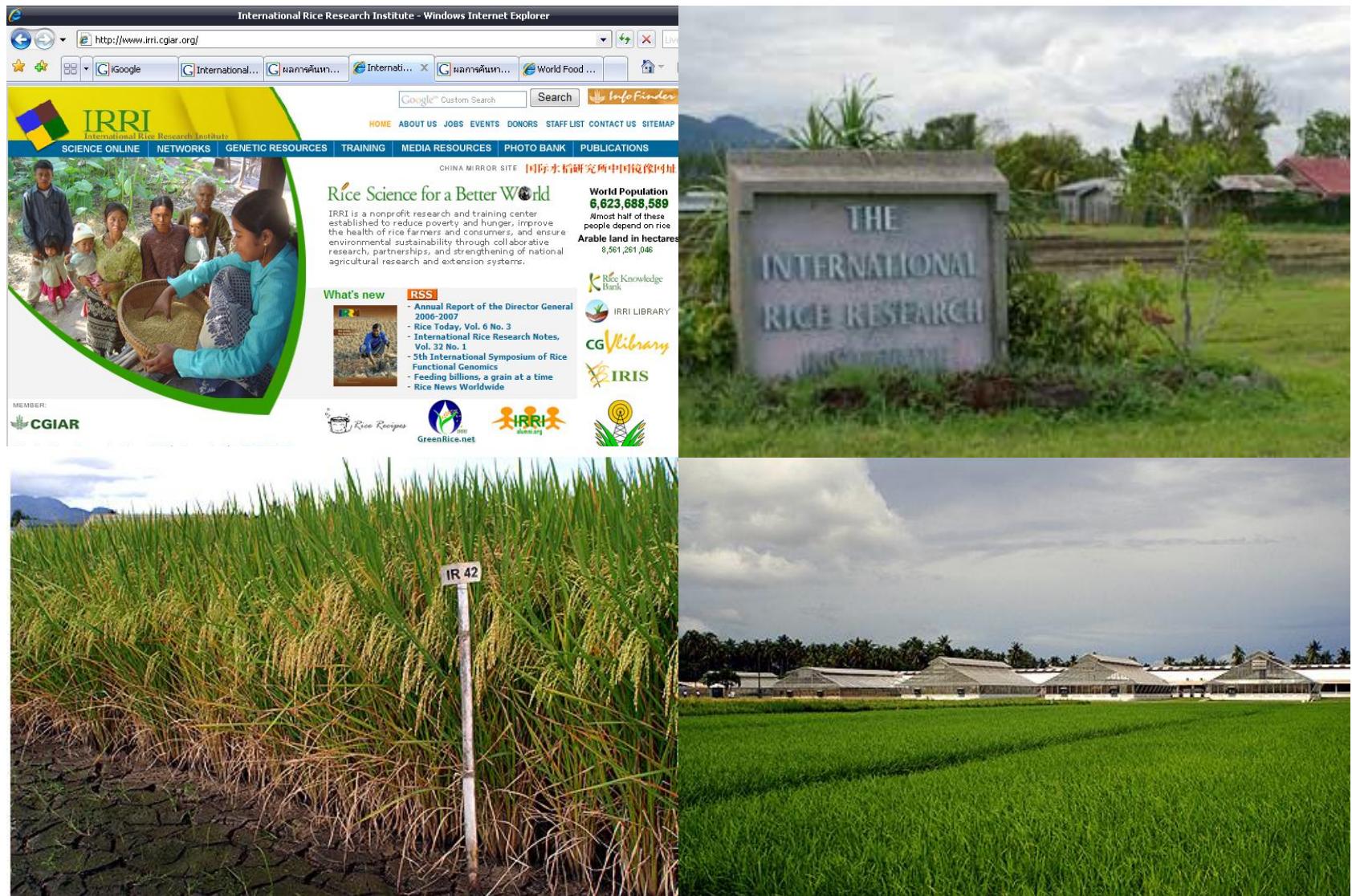
# IRRI

INTERNATIONAL RICE RESEARCH INSTITUTE

- Headquarters in Los Baños, the Philippines and offices in sixteen countries
- To develop new rice varieties and rice crop management techniques with finding sustainable ways to improve the well-being of poor rice farmers and consumers as well as the environment in mind









## Focuses on:

- the conservation and utilization of maize and wheat genetic resources
- developing and promoting improved maize and wheat varieties
- testing and sharing sustainable farming systems
- analyzing the impact of its work and researching ways for further improvement.



[Quiénes somos](#) [Investigación](#) [Noticias](#) [Publicaciones](#) [Obtener semilla](#)



## Novedades...



Pride and pragmatism sustain a giant Mexican maize (inglés) Zero-tillage a winner for winter wheat in Turkey (inglés)



The genetic revolution continues at CIMMYT (inglés)



RSS

Búsqueda

English

### *Maíz y trigo para el mundo en desarrollo:*

El CIMMYT pone ciencia de vanguardia al servicio de los agricultores de los países en desarrollo, ofreciéndoles opciones para incrementar su seguridad alimentaria y su calidad de vida mediante nueve productos distintivos entre los que figuran herramientas de investigación, sistemas de producción y capacitación aplicadas al cultivo de maíz y trigo.



headquarter  
↓  
**Ibadan,  
Nigeria**

Global responsibility: [Cowpea](#), [Soybean](#), [Bananas](#), [Plantain](#), and [Yams](#)  
Sub-Saharan Africa responsibility: [Cassava](#) and [Maize](#)

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New: [Annual Report 2006](#)  
[IITA Video](#)

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<a href="#">International school</a>	<a href="#">High-Value Products</a>	<a href="#">Early Warning Systems</a>	<a href="#">Contact news</a>
<a href="#">Hotel</a>	<a href="#">Opportunities and threats</a>	<a href="#">Developing Country Resources</a>	
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		<a href="#">Contact library</a>	
<a href="#">Restricted Access</a>	<a href="#">Resources</a>		
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<a href="#">Board</a>	<a href="#">Related websites</a>		
<a href="#">Intranet</a>	<a href="#">Genebank</a>		



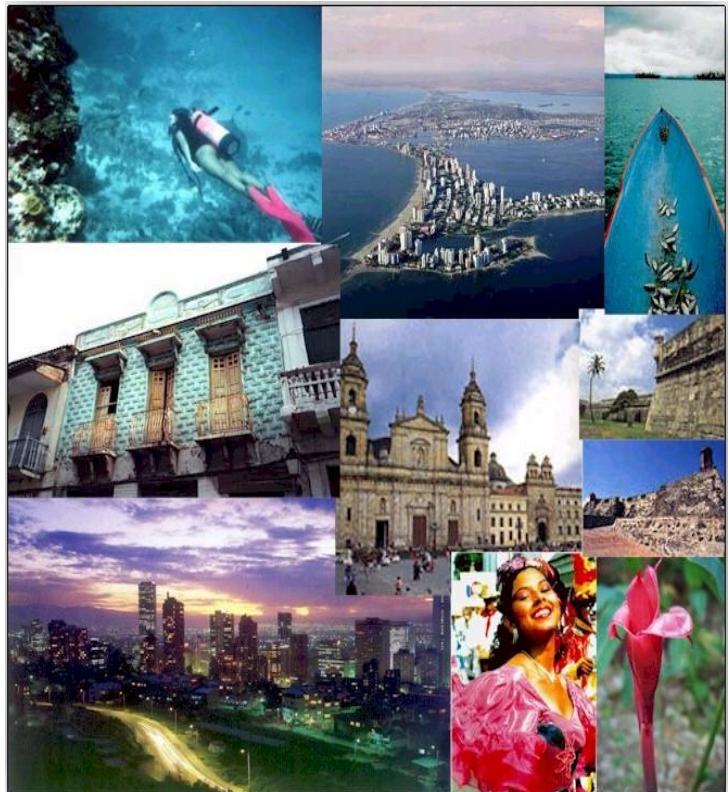


# CIAT

International Center for Tropical Agriculture

- Focus on Tropical Agriculture
- the improvement of two staple foods, cassava and common bean, together with tropical forages for livestock
- In Latin America and the Caribbean, research on rice

## Headquarter: Cali, Columbia



**CIAT***Science to cultivate change*

International Center for Tropical Agriculture / Since 1967

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### Latin America and global food security: Helping the whole world learn to fish

In the global debate about food security, two key issues concerning Latin America are often overlooked: first, the continued vulnerability of some parts of the region to food and nutrition insecur

[Read more](#)

### Crops



### Soils



### Subscribe to our newsletter

We protect your data.

A banner for the CIAT Strategy 2014-20, featuring several people smiling.



### Focus on :

- Resilient Nutritious Sweet potato
- Agile Potato for Asia
- Potato Seed for Africa
- Conserving Biodiversity for the Future



# International Potato Center

Agricultural research  
for development

A member of the  
CGIAR Consortium

Home   About CIP   Strategic Objectives   CGIAR Research Programs   Crops   Genebank   Impacts   News and Media   Resources



## Impact

[Read more >](#)

[Genebank >](#)

[Sweetpotato >](#)

[Potato >](#)

[Andean Roots  
& Tubers >](#)



Headquarter: Lima, Peru





Focus on :

- Resilient Dry land Systems
- Markets, Institutions and Policies
- Grain Legumes , wheat, sorghum
- Dry land Cereals
- Located at India

The screenshot shows the ICRISAT website homepage with a green header featuring the institute's name and a world map. Below the header is a navigation bar with links to Sitemap, E-mail, Intranet, Publications, infoSAT, KSIConnect, Flagship Initiatives, Collaborative Tools, CGIAR Links, and Search. The main content area includes a blog post by William D Dar, images of farmers, and sections on drought-resistant crops and gender research.

**What ICRISAT Thinks: The Director General's Blog**

**In a warmer world, climate smart grains must play a greater role**  
01 May 2014

Climate scientists from the United Nations Intergovernmental Panel on Climate Change have recently compiled thousands of climate change related studies from around the world into their fifth Assessment Report. This confirms that climate change is happening even faster, and with more damaging effects, than previously anticipated. [Read more](#)

**William D Dar**

**Food for Drought: Pigeon Pea**

 Pigeon pea is one of the critical crops that keeps drought from turning into famine.

Drought is a terrifying prospect for all farmers, and a matter of life and death for many. A nutritious legume that can produce harvests with just 65 cm of rain a year, pigeon pea protects lives from the ground up. [More ...](#)

**2014 – ICRISAT's Year of Gender**

 Catch the latest news on ICRISAT's gender research, stories from the field, videos and other resources

**Does climate information matter? An innovative tool to measure the value of climate services for farmers**

 **CCAFS Blog**  
Climate information can be a powerful tool in helping rural communities adapt to

**Finding the Faces of Farming: Grains and Groundnuts**

 **National Geographic**  
Photographing the farmers of the world might seem like a simple assignment. But then

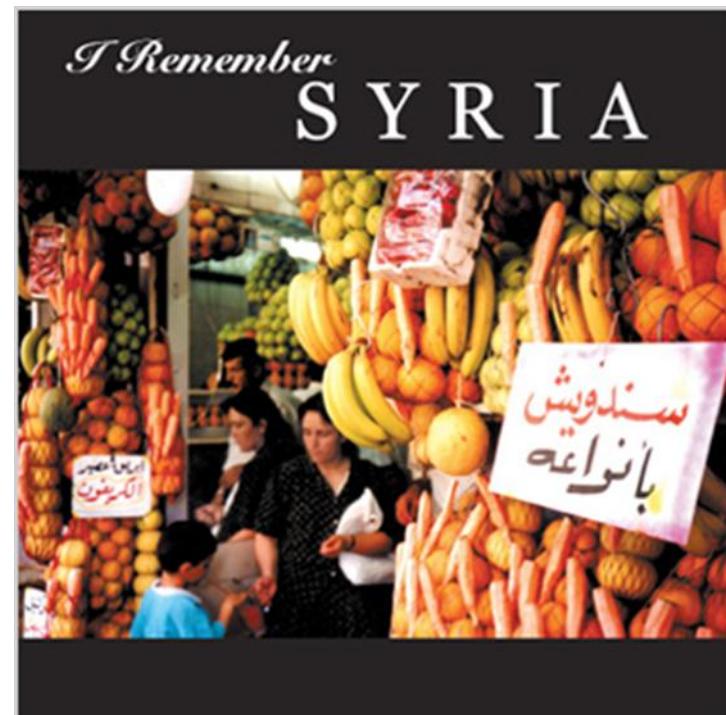


- The sustainable productivity of their agricultural production systems, wheat, barley, soy
- The incomes of small holder farmers living on dry lands and in fragile ecosystems
- Nutrition and national food security strategies





Headquarter:  
Aleppo, Syria



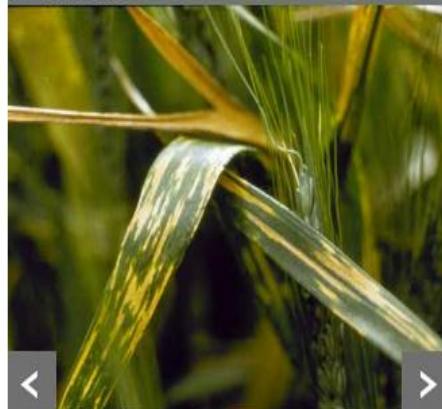


## ICARDA: a quick view

ICARDA is the global agricultural research center working with countries in the world's dry areas.

[More](#)

## FEATURES



### Tackling stripe rust

Initiating a new science-policy dialogue to tackle stripe rust disease and sustain global wheat production

[Read article](#)[Features archive](#)

### Decentralization

ICARDA's decentralized operation for more efficient and effective agriculture research and capacity development [More](#)



### Dryland systems

ICARDA is leading the CGIAR Research Program on Dryland Systems with partners in over 40 countries [More](#)



### Tackling Stripe Rust

Practical strategies that can be scaled-up to tackle stripe rust disease and sustain



### Promoting Conservation Agriculture

A proven technique that balances yields,

## NEWS/COMMENT

**Director General's Update:** policy + food security trends

**What's New at ICARDA:** updates, initiatives, staff news

**Science comment:** reflections from researchers in 35 countries

## RESEARCH TO ACTION

**For policy makers and planners:** Evidence to inform strategies for food security. [More](#)



### The 2<sup>nd</sup> International Wheat Stripe Rust Symposium



**AfricaRice**  
Rice science at the service of Africa  
La science rizicole au service de l'Afrique

Focus on :

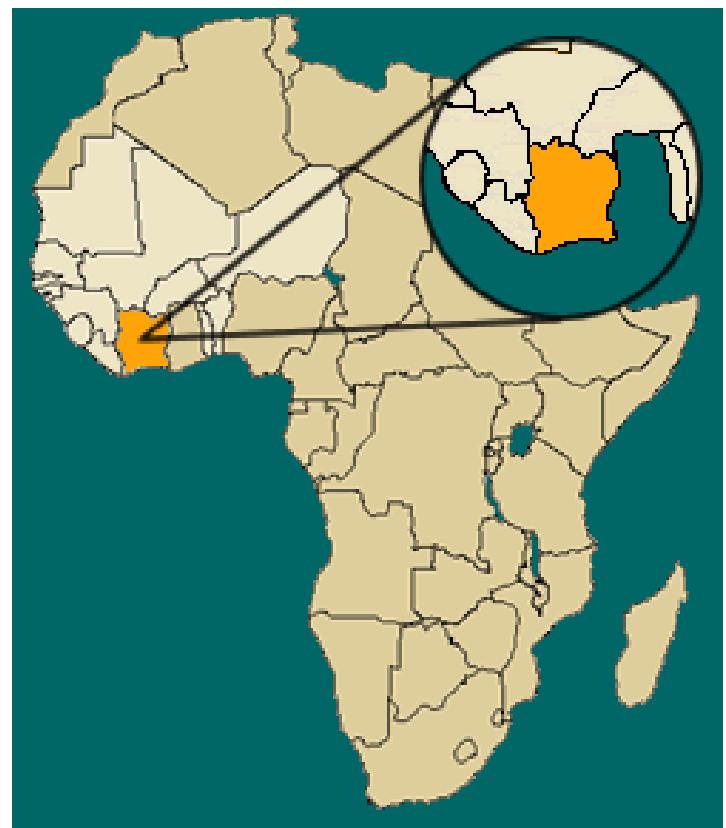
- To improve the well-being of rice producers and consumers in Africa
- sustainable rice sector development engendered by the widespread adoption of rice technologies, improved farming practices, favorable policies, effective institutions and programs

# WARDA

WEST AFRICAN RICE DEVELOPMENT ASSOCIATION



Headquarter:  
Bouake, Ivory Coast



# ASEAN AND FOOD COLLABORATION

ASEAN : The Association of Southeast Asian Nations



Bangkok Declaration  
8 January 1967

- Thailand
- Indonesia
- Malaysia
- Singapore
- Philippines

# ASEAN AND FOOD COLLABORATION

---

Head quarters: Jakarta, Indonesia



Its aims include accelerating economic growth, social progress, sociocultural evolution among its members, protection of regional peace and stability, and opportunities for member countries to discuss differences peacefully

# ASEAN AND FOOD COLLABORATION

---

ASEAN covers a land area of 4.46 million km<sup>2</sup>, which is 3% of the total [land](#) area of Earth

Population of approximately 600 million people, which is 8.8% of the world's population

# ASEAN AND FOOD COLLABORATION

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## Political

In ASEAN region ([Southeast Asia](#)) cohabits **democratic regimes** with authoritarian or military **dictatorships** (Myanmar)

## Ethnical

In the ASEAN countries there are local born citizens of ethnic **Chinese**, **Arabic** or **Hindu**.

## Socioeconomic development

From the economic point of view there are huge differences between the **ASEAN-6 economies and the four CLMV countries** (Cambodia, Laos, Burma, and Vietnam).

## Religious

**Islam** is the largest [religion](#) in ASEAN (official religion of **Brunei, Indonesia and Malaysia**), the **Buddhists** bloc of ASEAN countries consists of: Thailand, Cambodia, Laos, Myanmar, Singapore and Vietnam. The Philippines is mainly **Christian**.

About **42% of the ASEAN population** is [Muslim](#) (mostly Sunni), then follow by [Buddhism](#) (18%) and **Christianity** (1

# ASEAN AND FOOD COLLABORATION

## Halal Food

Foods that are permissible for Muslims to eat or drink under Islamic Shari'ah



The Halal Standard Institute of Thailand  
The Central Islamic Council of Thailand

# ASEAN AND FOOD COLLABORATION

---

There are 1.6 billion Muslims in over 112 countries (2006), creating substantial marketing opportunities for halal food products.

South East Asia is becoming an important and competitive regional market for Halal products, with a vast consumer market of 225 million Muslims, fast developing Halal food production and progress on Halal certification.

Thailand is the sixth largest halal food exporter in the world. The domestic halal food market in Thailand grows around 20 percent a year.

# ASEAN AND FOOD COLLABORATION

---

## Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS)

### ASEAN INTEGRATED FOOD SECURITY (AIFS) FRAMEWORK

The AIFS Framework is supported by SPA-FS. In addressing the long-term food security in the ASEAN region, an AIFS Framework is developed to provide scope and joint pragmatic approaches for cooperation among ASEAN member States.

# ASEAN AND FOOD COLLABORATION

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The goal of SPA-FS is to ensure long-term food security and to improve the livelihoods of farmers in the ASEAN region.

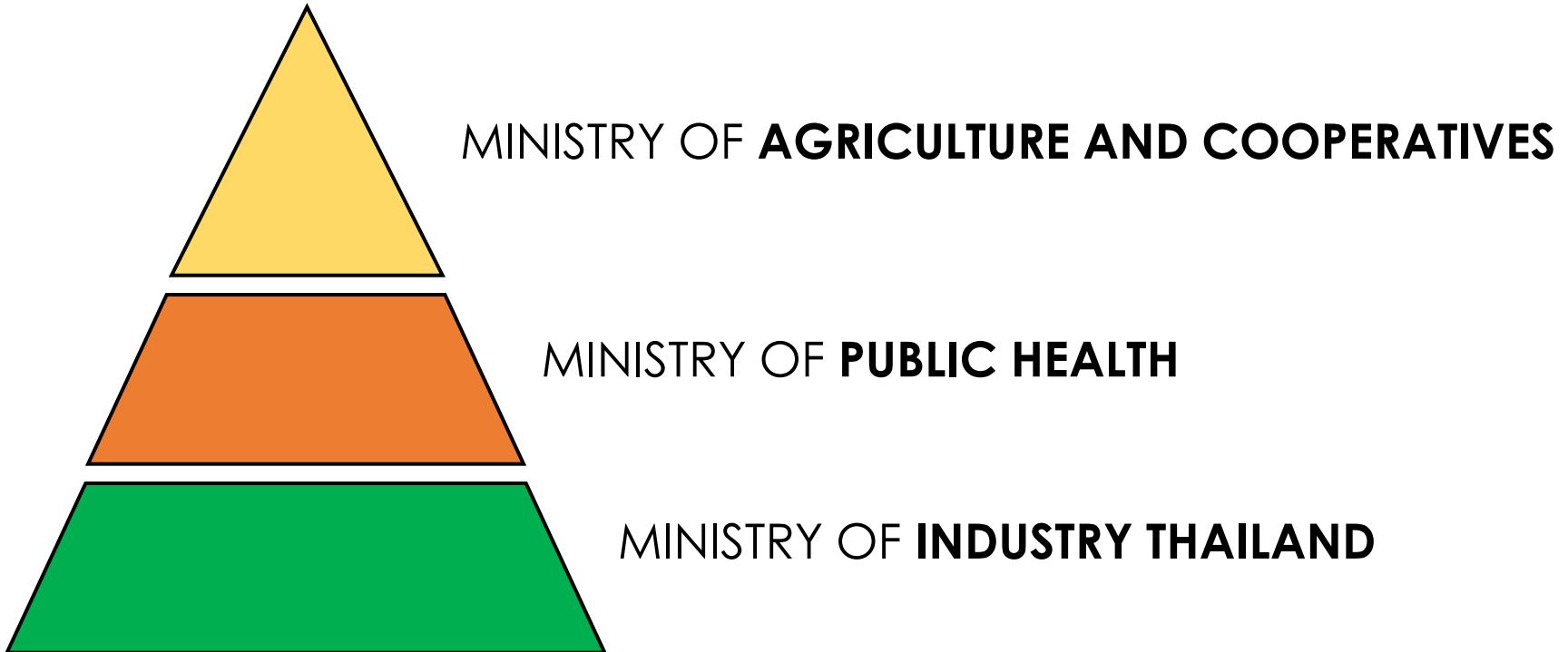
## OBJECTIVES

To achieve the goal, the SPA-FS has the following objectives:

- a) To increase food production;
- b) To reduce postharvest losses;
- c) To promote conducive market and trade for agriculture commodities and inputs;
- d) To ensure food stability;
- e) To promote availability and accessibility to agriculture inputs; and
- f) To operationalise regional food emergency relief arrangements.

# THAI ORGRANIZATIONS

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กระทรวงเกษตรและสหกรณ์  
Ministry of Agriculture and Cooperatives

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[News](#)

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Rubber sapling prices too high, ministry told (10/03/2554)

The Agriculture Ministry has been asked to cut its proposed prices for rubber saplings as part of a programme to expand rubber plantations in the country



Rising raw material cost to push up feed meal price (28/01/2554)

The price of feed meal is expected to increase by 5-10 per cent late this year prices of raw materials have shot up by 15-45 per cent, according to the Thai Feed Meal Association.



Tesco Lotus opens modern fresh distribution centre (27/01/2554)

Tesco Lotus has opened a Bt1.6billion fresh distribution centre that it says is the most modern in Asia, reinforcing its green business leadership.



Better safe than sorry (27/01/2554)

The notification by the European Union food-safety authorities that certain vegetables imported from Thailand were contaminated with insecticides has prompted the Thai authorities to step up measures to protect our food industry.



Floral expo in Chiang Mai (17/01/2554)

An international horticulture expo "Royal Flora Ratchaphruek 2011" will be held from November 9, 2011 to February 15, 2012 in the northern city of Chiang Mai, Agriculture Minister Theera Wongsamut said yesterday

[Kaset Radio](#)

Ready



[ThaiKasetTV](#)



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ปลัดกระทรวงฯ มอบนโยบาย



0:00 / 4:15 YouTube

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# Ministry of Public Health

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Vision, Mission and Value of the Ministry of Public Health

**Vision**

To be the core agency in developing the health system with quality, efficiency and equality; with participation of the people, communities and all sectors for good health of all Thai people in order to achieve a good and sustainable society following the King's Sufficiency Economy philosophy.

**Mission**

National health  
Commission  
office of Thailand



Health system  
research  
Institute (HSRI)



# กระทรวงอุตสาหกรรม

## Ministry of Industry Thailand

กระทรวงอุตสาหกรรมเป็นที่พึงของประเทศไทยและประชาชนอย่างแท้จริง



ข่าวอุตสาหกรรมประจำวัน : บุคลากรนิจัยอ้อยน้ำตาล ตีกรอบยุทธศาสตร์พัฒนา [เดลินิวส์ (กรอบป้าย), หน้า 7]

ค้นหา...

หน้าหลัก

แนะนำกระทรวง

นโยบายและแผน

รายงาน

โครงการสำคัญ

ตราสัญลักษณ์

ลองใช้ตัวอย่าง

ร่วมภาคภูมิใจ  
ครบ 6 รอบ  
**72 ปี** (5 พฤษภาคม 2557)  
ขอเชิญข้าราชการและพนักงานกระทรวงอุตสาหกรรม  
ร่วมกิจกรรมวันสถาปนากระทรวงอุตสาหกรรม ครบ 6 รอบ

กระทรวงอุตสาหกรรม

1 2 3 4 5



ข่าวประชาสัมพันธ์

ก.อุดฯ เส้นเดียวกัน พ.ศ.  
๒๕๕๗ สำหรับผู้ประกอบการ

กระทรวงอุตสาหกรรมจัดงานวัน  
สถาปนา ครบ 6 รอบ

**G**reen Industry  
**Mr. Green**

SEARCH

STUDENT TEACHER STAFF PARENTS ALUMNI SCHOLARSHIP KU MAP



มหาวิทยาลัยเกษตรศาสตร์  
KASETSART UNIVERSITY

Kasetsart University aims to create knowledges of the land for the well-being of nation.

HOME

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ADMISSIONS

FACULTY AND PROGRAM

ORGANIZATION

RESEARCH

CONTACT

11th International Joint Conference on Computer Sciences and Software Engineering  
"Human Factors in Computer Science & Software Engineering"  
14-16 May 2014

11th International Joint Conference on Computer Sciences and Software Engineering  
14 - 16 May 2014

6 / 7

## Hot News: ศาสตราจารย์ ดร. สมเด็จพระเจ้าลูกเธอ เจ้าฟ้าจุฬาภรณวลลักษณ์ อัครราชกุมารี

ศาสตราจารย์ ดร. สมเด็จพระเจ้าลูกเธอ เจ้าฟ้าจุฬาภรณวลลักษณ์ อัครราชกุมารี พระราชทานเครื่องดมยาสลบ เครื่องข่ายหายใจ และเครื่องติดตามสัญญาณชีพขณะผ่าตัด แก่ คุณวงศ์ตัวแพทยศาสตร์ มหาวิทยาลัยเกษตรศาสตร์ ...More

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# KASETSART UNIVERSITY

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- Faculty of Fisheries
- Faculty of Forestry
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- Faculty of Agro-Industry



# INSTITUTION OF FOOD RESEARCH AND PRODUCT DEVELOPMENT



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... to Miss Plemchai Tangkanakul **New!** welcome for faculty staffs from Indian Institute of Crop

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## โปรตีนเกษตร

ผลิตจากถั่วเหลืองไม่ดัดแปลงพันธุกรรม  
(NON-GMO)



IFRPD Life's Style



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ONLINE



News Update

Award of pride

Japen  
cher of



News Update

On 4 th March 2014, IFRPD, Institute of Food Research and Product Development, Kasetsart University, organized a seminar...

News Research

Calendar

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14.05.2014 • ประชุมคณะกรรมการค่า...

# Kasetsart Agricultural And Agro-industrial Product Improvement Institute (KAPI)

STUDENT TEACHER STAFF PARENTS ALUMNI SCHOLARSHIP KU MAP



มหาวิทยาลัยเกษตรศาสตร์  
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HOME

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ADMISSIONS

FACULTY AND PROGRAM

ORGANIZATION

RESEARCH

CONTACT

## ORGANIZATION

Bangkhen Campus

Kamphaeng Saen Campus

Sri Racha Campus

Sakon Nakhon Province Campus



Home > ORGANIZATION > Bangkhen Campus > Kasetsart Agricultural and Agro-Industrial Product Improvement Institute (KAPI)

แม่รีท่าน

## Kasetsart Agricultural and Agro-Industrial Product Improvement Institute (KAPI)

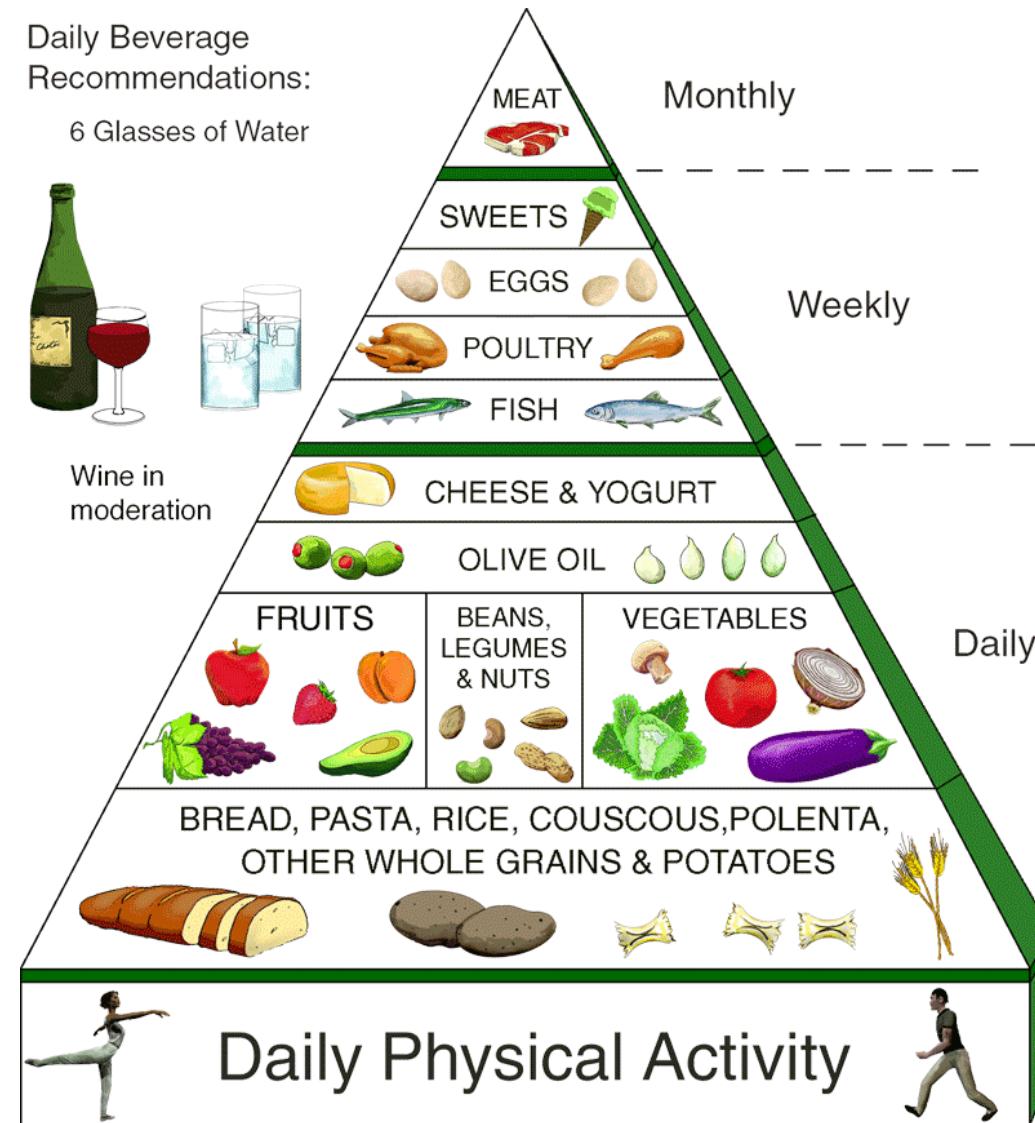
### Introduction

To be an excellent center by continuously developing and improving the international standard researches related to non-food products, quality of non-food related researches to be an outstanding research institute, especially in non-food products. To perform innovative-research and develop sustainable knowledge and technology in terms of biomass utilization/bio-energy and environment as well as natural product for health. To strengthen and extensively promote the developed research technology and products in the industries and world competitiveness.

**Kasetsart Agricultural and Agro-Industrial Product Improvement Institute (KAPI)**

Link: <http://www.kapi.ku.ac.th/>

# CONCLUSION: CHAPTER I :: FOOD AND HUMAN



# CONCLUSION: CHAPTER I :: FOOD AND HUMAN

**FOOD CONSUMPTION**

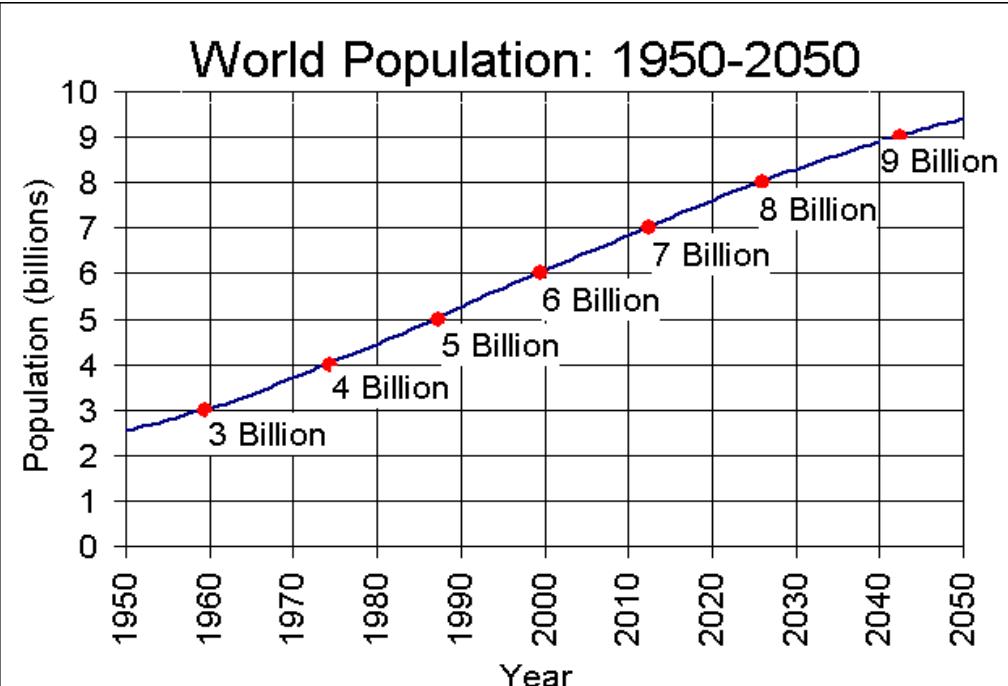
**STAY ALIVE**



**STAY HAPPY**



# CONCLUSION: CHAPTER II :: FOOD AND POPULATION



Source: U.S. Census Bureau, International Data Base, August 2006 version.



# CONCLUSION: CHAPTER III :: FOOD FROM NATURE



## CONCLUSION: CHAPTER III :: FOOD FROM NATURE



# Insect



# CONCLUSION: CHAPTER III :: FOOD FROM NATURE

## FOOD: PROTEIN



**flying termite**



**Weaver Ant egg**



**bamboo caterpillar**

## Clacium & Phosphorus



Weaver Ant egg



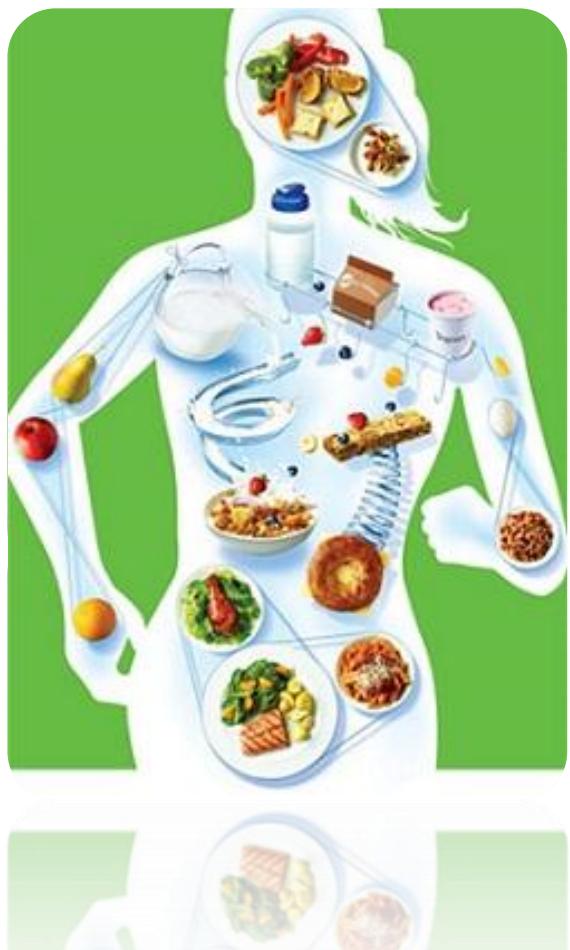
Weaver Ant

# CONCLUSION: CHAPTER III :: FOOD FROM NATURE

## CAUTION!



# CONCLUSION: CHAPTER IV :: FOOD NUTRITION



# CONCLUSION: CHAPTER V :: FOOD PRESERVATION



# CONCLUSION: CHAPTER VI :: ORGANIZATIONS



# THANK YOU FOR YOUR ATTENTION



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