

Session 3: Food Safety Issues

*Chaired by: Prof Dedi Fardiaz
Bogor Agricultural University, Indonesia*


Sustainable Food Supply for Food Safety and Food Security

*Dr Subash Dasgupta
FAO-RAP
Thailand*



DEFINE FOOD SUPPLY

- Sustainable food supply means bridging the gaps between food availability and access with affordability
- Food production is capital for food supply and food supply is central to food security



Sustainable Food Supply in an individual country

Largely depends on

1. Aggregate food production
2. Capacity to import food
3. Food stock (farmer's level, retailer & whole sale levels and public sector level)
4. Food aid
5. Food safety-net program

Main determinant of Sustainable Food Supply is the availability of food



Levels of Food supply system

- Global level
- National level
- Household level

Major concern is how to enhance food security at household level

Changes in Food Supply system

- From Aggregate to commodity specific
- More on demand driven
- More globally controlled than locally
- From price volatility to long-term price hikes
- From primary to processed/packaged food
- Emergence of super market chain
- Changes in dietary pattern
- Trade policies

These all together make food supply systems more vulnerable and unsustainable in developing countries

Food demand is on rise

- Growth in population
- Growth in per capita income
- Urbanization
- Consumption behavior



Emerging threats to sustainable food production

- Slow down in productivity growth of major food crops
- Population growth and demographic transition
- Land scarcity and its conflict with bio-energy crops
- Climate change and vulnerability
- Water scarcity
- Under investment in agriculture

Future of food production is becoming more unpredictable



Possible options for increasing food production

- *Varietal improvement*
- *Maintaining soil fertility*
- *Enhancing research and extension*
- *Reducing post-harvest loss*
- *Smoothing inputs supply systems*
- *Adaptation to climate change*

Main determinant of sustainable food supply is food production

Concerns in sustainable food supply

- Fluctuation in food production
- Shift in influence and control in food supply from national to international bodies
- Unpredictable trends in world food market
- Price volatility
- Conflicts
- Urban population will equal rural population by around
- Dietary change
- Poor governance

Issues

- Working together to bring more synergies among production, supply and food security
- Bridging gaps between producers and consumers
- Ensure good governance in the entire chain
- Free flow of authentic information on food production, supply and food security status of the country
- Making food supply system more pro-poor

FAO's Approach

- Out of 11 Strategic Objectives of FAO, number one is Sustainable intensification of crop production
- It has also been reflected in FAO Regional Priority Framework 2010-2019, where out of five strategic priority areas number
 1. Strengthening food and nutrition security, and number
 2. Fostering agricultural production and rural development

These are the clear manifestation of FAO's commitment toward food production, supply and food security for hunger free world

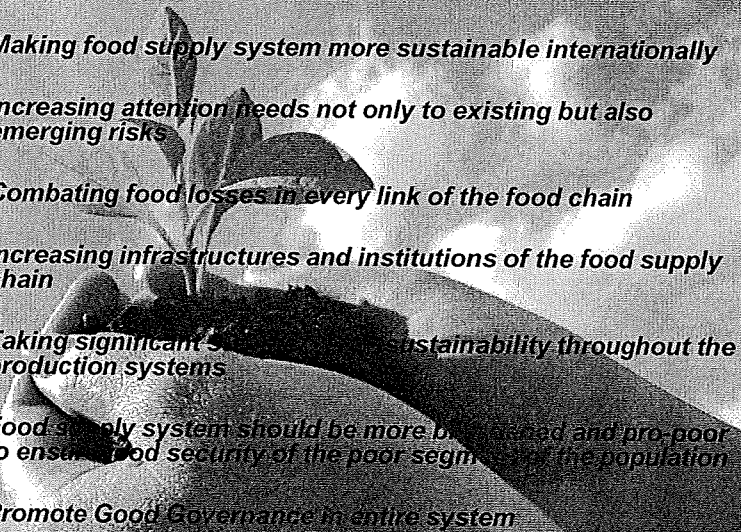
Conclusions

Food production, food supply and food security is dialectically inter-related and can not be isolated one from others particularly in developing countries

Food security status of any country can be further enhanced by ensuring more integration among these three vital components which can provide sustainable food security and also national security of the country

Trying to solve problem of one component ignoring others will be counterproductive

Recommendations

- 
- *Strengthening agriculture production systems in developing countries*
 - *Making food supply system more sustainable internationally*
 - *Increasing attention needs not only to existing but also emerging risks*
 - *Combating food losses in every link of the food chain*
 - *Increasing infrastructures and institutions of the food supply chain*
 - *Taking significant steps to ensure sustainability throughout the production systems*
 - *Food supply system should be more balanced and pro-poor to ensure food security of the poor segments of the population*
 - *Promote Good Governance in entire system*

Industrial Case Study in Resource and Environmental Conservation

*Mr Suradech Thiapairat
Ajinomoto Co. (Thailand) Ltd.
Thailand*

Industrial Case Study in Resource and Environmental Conservation

Mr Suradech Thiapairat
Ajinomoto Co. (Thailand) Ltd.
Thailand

Ajinomoto Co., (Thailand) Ltd. was established in 1960 and just celebrated the 50th anniversary of its foundation last year. The company has been developing amino acid-based products such as Umami Seasoning *AJI-NO-MOTO* (MSG) and feed products (L-Lysine) and also nucleic acid-based products such as Ribonucleotides. Both the Ajinomoto group's amino acid and nucleic acid businesses have been contributing to solving problems concerning food resource and environmental conservation. The group produces both amino acids and nucleic acids by fermenting locally harvested agricultural products such as cassava and sugar cane. The manufacturing process generates by-products in amounts which are much larger than those amino acid or nucleic acid products. These by-products which are also rich in natural nutrients are turned by the group into 'co-products', making the most efficient use of them by supplying them to local agricultural and livestock farmers and also fishermen as fertilizers and feeds.

Two key points of the Ajinomoto group in contributing to food resource and environmental conservation include:

- (1) Strengthening local cooperation and making full use of 'co-products' (high-value-added products);
- (2) Zero emissions

(1) Strengthening local cooperation and making full use of 'co-products'

The Ajinomoto group produces amino acid and nucleic acid products using locally procured agricultural products. To assure sustainable procurement, the group has been cooperating with local farmers in the area where it has a manufacturing plant to help improve their productivity or to help them to produce more harvests through the "Bio-Cycle".

By-products from the fermentation process which are rich in nutrients are recognized as another valuable bounty of nature and fully utilized as fertilizer and livestock feed. A liquid fertilizer "Ami Ami" and a solid fertilizer "Amimate" are representative 'co-products' of Ajinomoto Co., (Thailand), which are mainly utilized as fertilizers for the agricultural industry such as cassava, sugar cane, rice and etc. In addition, rice husk ash from biomass boilers is also being developed as a soil conditioner for sugar cane and cassava crop fields in Kamphaeng Phet province.

FD Green (Thailand) Co., Ltd., which is an affiliate of the Ajinomoto group, is mainly engaged in the recycling of agricultural resources for Ajinomoto Co., (Thailand) Ltd.

This company is actively conducting R&D and PR activities for the effective use of 'co-products' under the slogan "We will make the world green" and has established its position as a top manufacturer of fertilizers in Thailand.

(2) Zero emissions

Through the fermentation process, natural raw materials such as cassava and sugar are transformed into amino acid or nucleic acid products. These processes require a lot of water and energy. Accordingly, to minimize environmental impact, the Ajinomoto group is committed to reducing discharged water, waste and CO₂ emission from the processes to zero as a group-wide target.

In regard to reduction of CO₂ emissions, the manufacturing factories have been introducing equipment appropriate for local operation and infrastructures.

For example, the Phrapradaeng MSG factory has introduced Natural Gas Cogeneration System since December 2007 to generate electricity and steam by using natural gas, which enables to reduce CO₂ emission by 22,000 tons a year.

Another example is the Kamphaeng Phet MSG factory which aims to be a Green Factory that has introduced Biomass Boilers since April 2009. The boilers are fueled by rice husk which is an unused agriculturally-derived resource to generate steam and is able to reduce CO₂ emission by 150,000 tons a year. Due to its ability to reduce CO₂ emissions, Ajinomoto Co., (Thailand) Ltd. has applied this project for CDM (Clean Development Mechanism), which has been introduced for the first time in the Global Ajinomoto Group. Both the Japanese and Thai governments approved it as a CDM project in March and May 2009 respectively. The project is being further applied to be registered as a United Nation's CDM project.

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 Eat Well, Live Well.
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Ajinomoto Case Study
 in
Resource and Environmental Conservation



AJINOMOTO Always Grows With Thais

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GLOBAL NETWORK
AJINOMOTO

50th
AJINOMOTO
Anniversary

<http://www.ajinomoto.com/globalnetwork/index.html>

Ajinomoto Co.,(Thailand) Ltd

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AJINOMOTO. Milestone of Ajinomoto CO., (Thailand) Ltd. **50th**
AJINOMOTO Anniversary

Ajinomoto Thailand Milestone Map from 1960-2010

1960, 1961, 1962, 1964, 1969, 1971, 1972, 1974, 1976, 1977, 1978, 1979, 1980, 1983, 1984, 1985, 1989, 1990, 1991, 1992, 1993, 1995, 1997, 2000, 2001, 2003, 2004, 2005, 2008, 2009, 2010

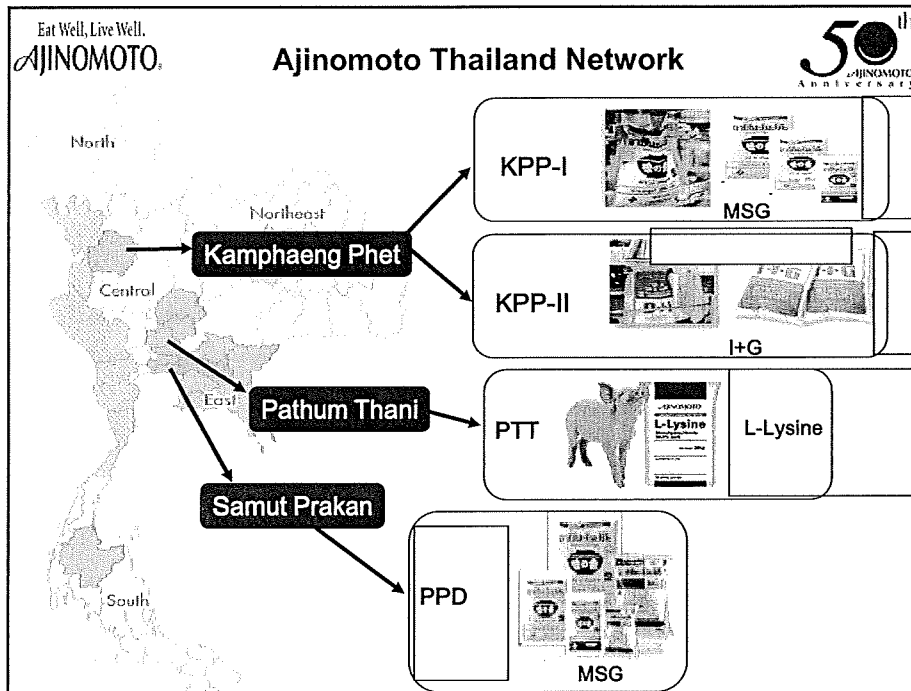
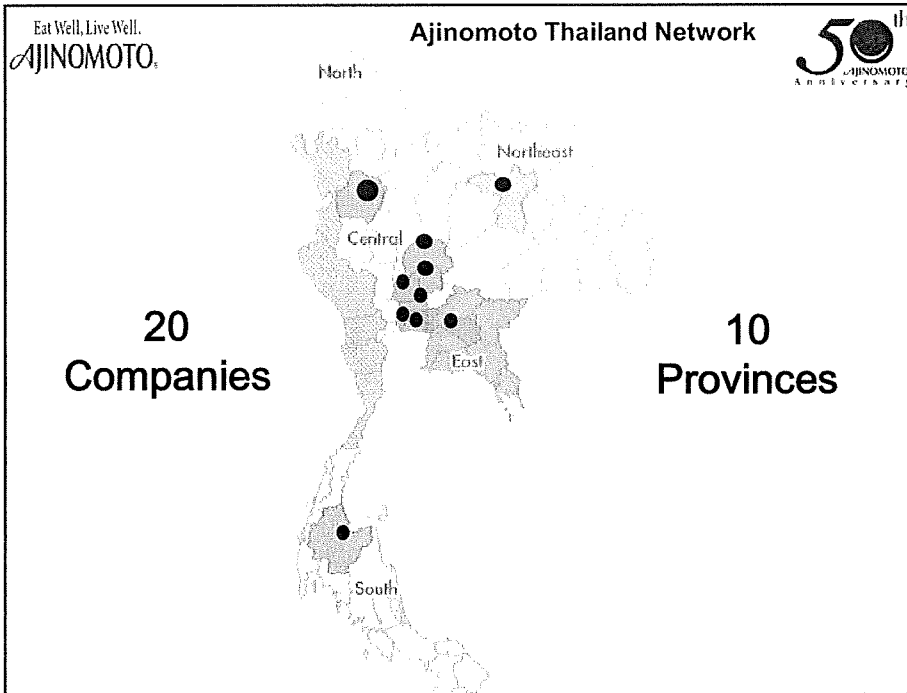
60's, 70's, CALPIS, Cooking Club, 50's

2010
The 50th Anniversary of the Establishment of Ajinomoto Co. (Thailand) Ltd.

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AJINOMOTO. Ajinomoto CO., (Thailand) Ltd. **50th**
AJINOMOTO Anniversary

Company Products

<p>Seasoning</p>	<p>Instant Noodle</p>	<p>Animal Nutrition</p>
<p>Beverage</p>	<p>Processed Food</p>	<p>Fertilizer</p>
<p>Industrial Food Ingredient & Enzyme</p>	<p>Frozen Food</p>	<p>Packaging</p>



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Ajinomoto Thailand Network

50th AJINOMOTO ANNIVERSARY

FD Green (Thailand) Co., Ltd.: an affiliate of Ajinomoto Co., (Thailand) established in 2001

Type of Business : manufacture of fertilizer

Kamphaeng Phet

Samut Prakan

Amimate
Solid Fertilizer
Ami-Mate

Liquid Fertilizer

Soil Conditioner ▼

Rice Husk Ash

Chemical Fertilizer ▼

Ammonium Chloride **Ammonium Sulfate**

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Ajinomoto CO., (Thailand) Ltd.

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VISION

To be a global company by contributing to the better lives of people through our food and health and other related products.

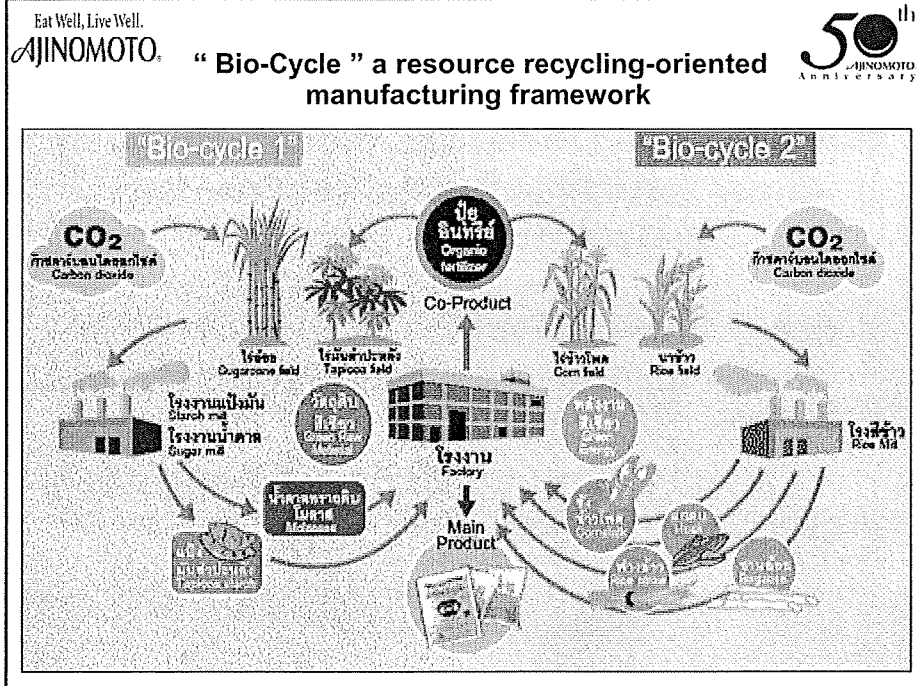
**Contributing to the realization of a sustainable
global environment and a better society
through business activities**

- Producing with minimal environmental impact on the global environment and ensuring sustainable procurement of resources. (To create a raw material supply system that considers the ecosystem)
- Contributing to the creation on sustainable social system and lifestyles through products, services and information



The Key Points of the Ajinomoto group to
contribute to food resource and environmental
conservation

- (1) Strengthening local cooperation and making full use of Co-products (high-valued-added product)
- (2) Zero emissions



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Ajinomoto Case Study in Resource and Environmental Conservation

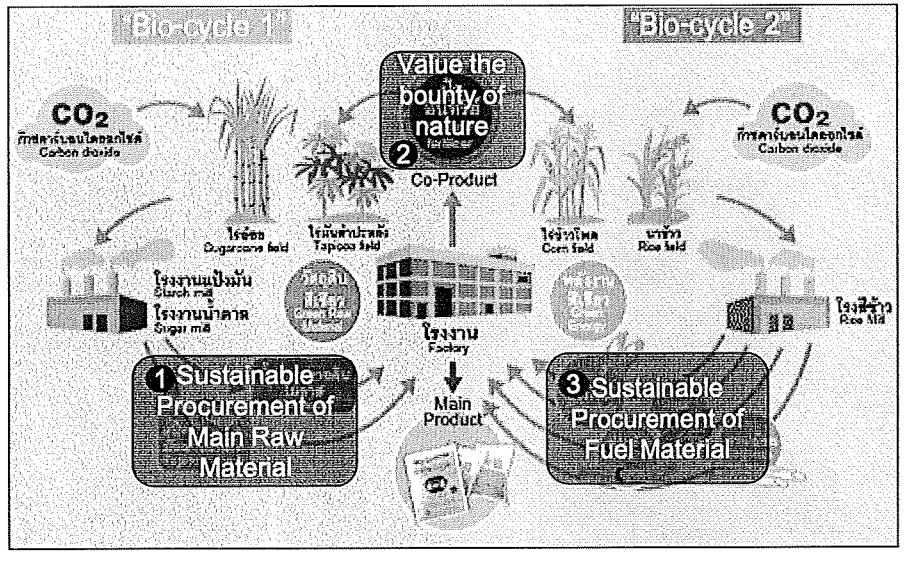
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The Key Points of the Ajinomoto group to contribute to food resource and environmental conservation

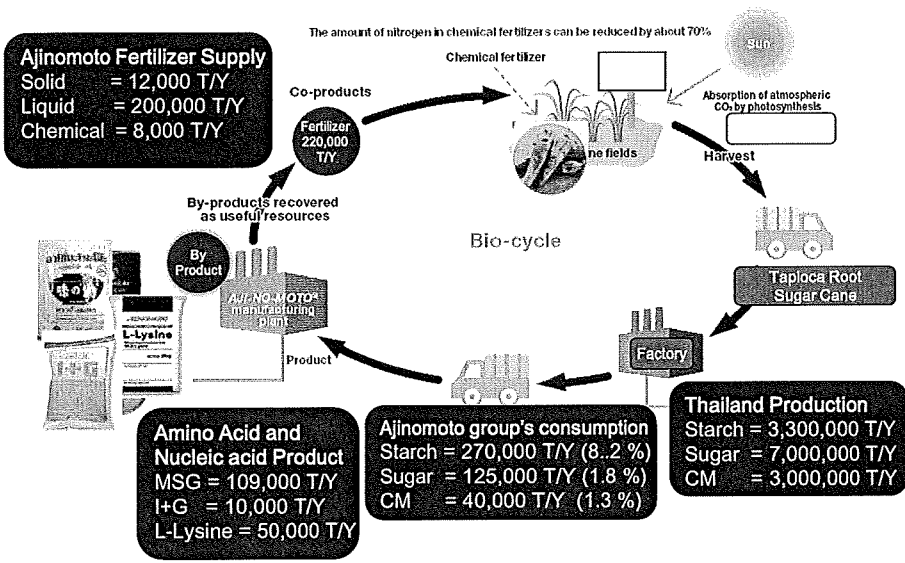
(1) Strengthening local cooperation and making full use of Co-products (high-valued-added product)

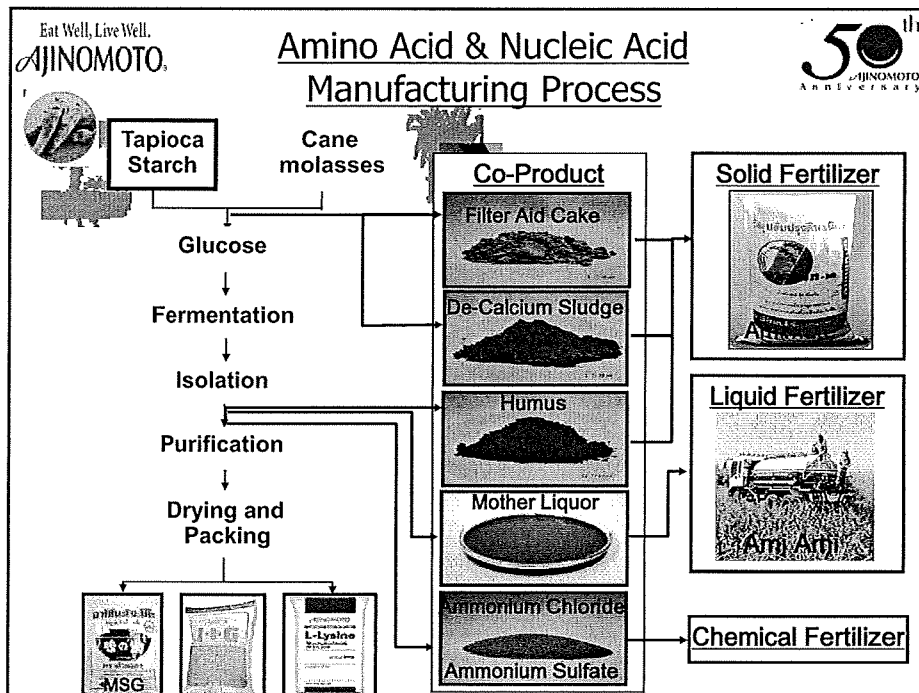
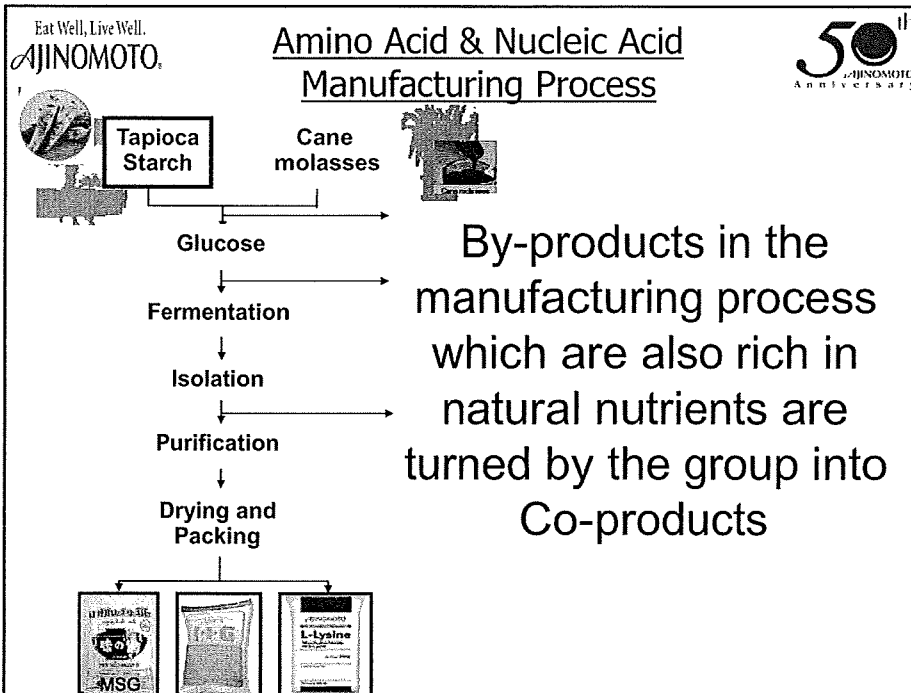
(2) Zero emissions

“Bio-Cycle” a resource recycling-oriented manufacturing framework



Ajinomoto “Bio-Cycle”

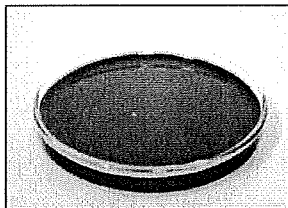




- an affiliate of the Ajinomoto group was established in Y 2001
- engaged in the recycling of agricultural resources for Ajinomoto Co., (Thailand) Ltd.
- actively conducting R&D activity for the effective use of co-products



- Slogan “ We will make the world green ”
- Mission: a top manufacture of fertilizers in Thailand.

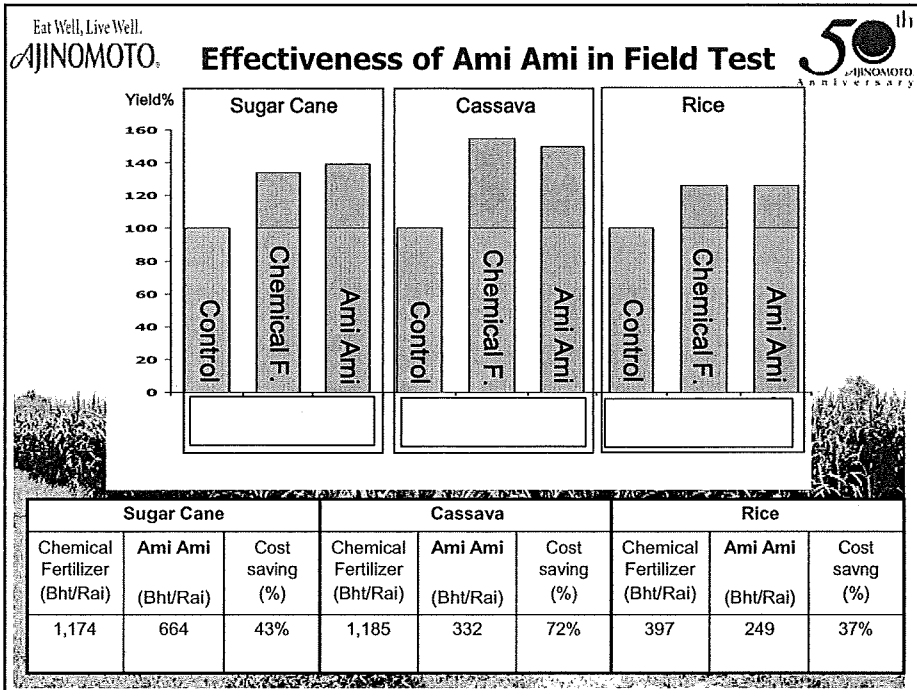


Ami Ami

Ami Ami is liquid fertilizer which is generated from the manufacturing process. It contains nitrogen 5%. It is very popular for several kinds of agricultural crops such as sugar cane , cassava , rice and corn

% N	% P	% K
5.0	0.8	0.6









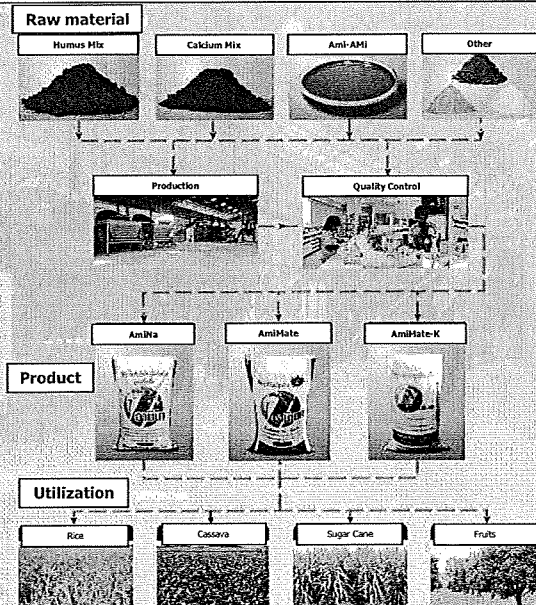
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Co-products of MSG process

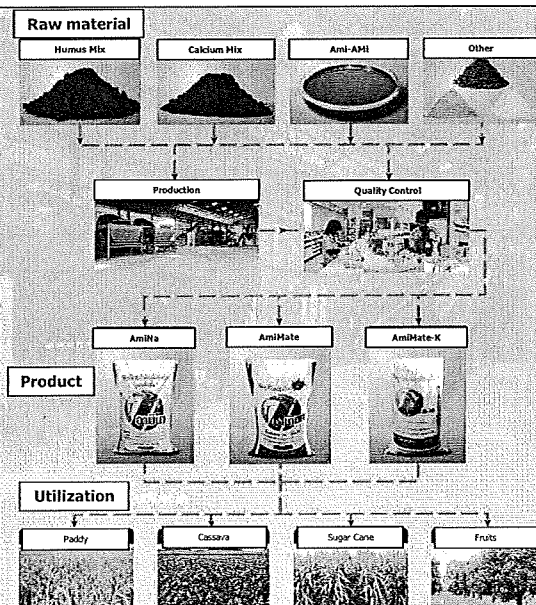
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Name	Source	Content
Filter aid cake	Glucose production 	Organics ~ 25%
Calcium sludge	De-Calcium process 	Ca = 12% K = 13%
Humus	Bacteria cell from fermentation 	N = 3% Organics = 35%
Ammonium Sulfate (Chemical fertilizer)	Nitrogen remains from MSG crystallization 	N = 17-18% K = 7-8%

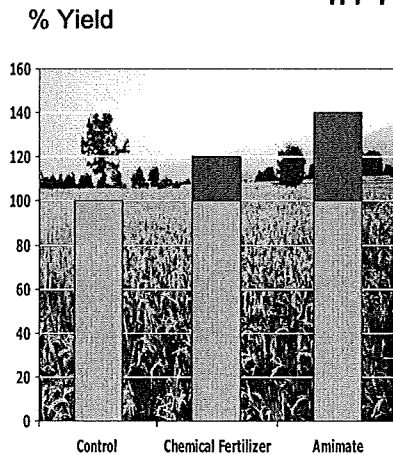
Fertilizer Process



Fertilizer Manufacturing Process



Effectiveness of Amimate in Rice Field



Rice		
Chemical Fertilizer (Bh/Rai)	Amimate (Bh/Rai)	Cost saving (%)
718	597	17%

Amimate formula 3-5-5

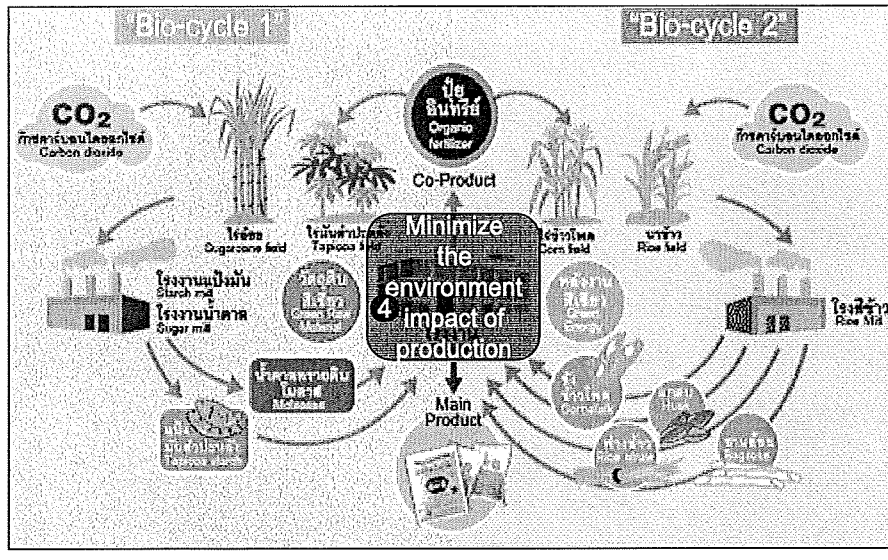
Ajinomoto Case Study in Resource and Environmental Conservation

The Key Points of the Ajinomoto group to contribute to food resource and environmental conservation

(1) Strengthening local cooperation and making full use of Co-products (high-valued-added product)

(2) Zero emissions

“Bio-Cycle” a resource recycling-oriented manufacturing framework

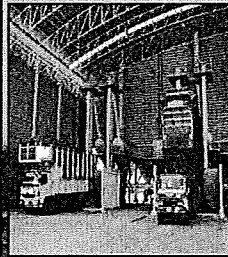


AJINOMOTO GROUP

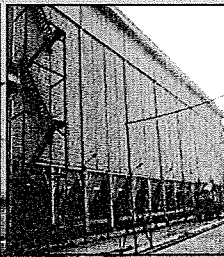
Zero Emission Policy & Target

Priority issue	Description	Target
Reduction of greenhouse gas emission	Reduce CO ₂ emission	By 20% in comparison to the FY 2002 results
Conservation of water resource	Reduce discharged water volume	By 20% in comparison to the FY 2002 results
3R of waste (reduce, reuse, recycle)	Reduce waste	Waste recovery ratio > 95%

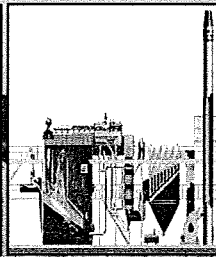
Biomass Boilers (Rice Husk) : KPP Factory



RH consumption
350 T/day



RH stocking capacity 10,000 T
(32 silos with 128 outlets)



Boiler capacity:
14.5 T-steam/hr
X 4 M/C = 58 T/hr
Pressure 13-Bar



Ash 70 T/day
Treated by:
> Cement manufacturer
> Soil Conditioner

Biomass Boilers (Rice Husk) : KPP Factory

**CO₂ Emission
Reduced by
150,000 CO₂ tons / Y**

**Started operation since
April, 2009**

**TGO (Thai Green House Gas Organization)
approved "Biomass Boiler for CDM Project"
on May 21, 2009**

Under projection validation by CB of UNFCCC



Biomass Boilers (Rice Husk) : KPP Factory

Develop RHA as Soil Conditioner for
Cassava, Sugar Cane & Rice Crop Field



Contribution to Society

RH 75,000 T/Y
Ash 15,000 T/Y
↓
No landfill

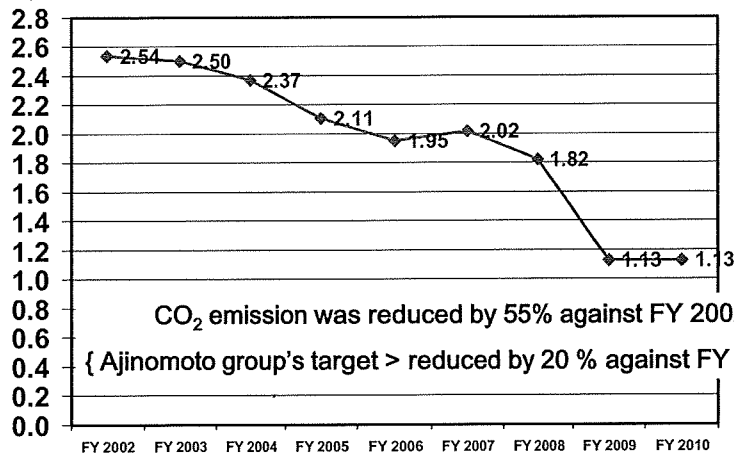
Used as soil conditioner
> 9,000 T/Y (60%)
Treated by Cement
Manufacturing Factory
> 6,000 T/Y (40)

Ash Utilization → Developed to Soil conditioner

“Zero Emission”

CO₂ Reduction: KPP-I Factory

CO₂ ton / MSG ton



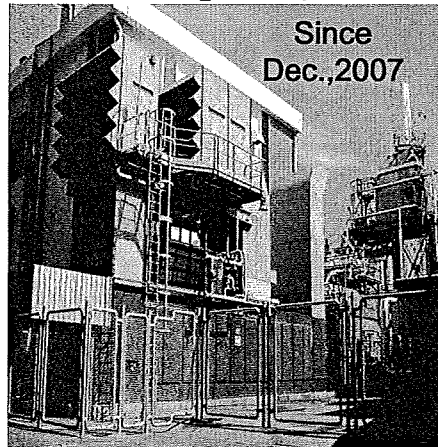
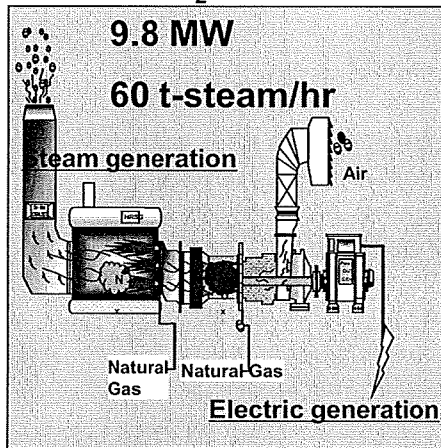
CO₂ emission was reduced by 55% against FY 2002

{ Ajinomoto group's target > reduced by 20 % against FY 2002 }

“Zero Emission”

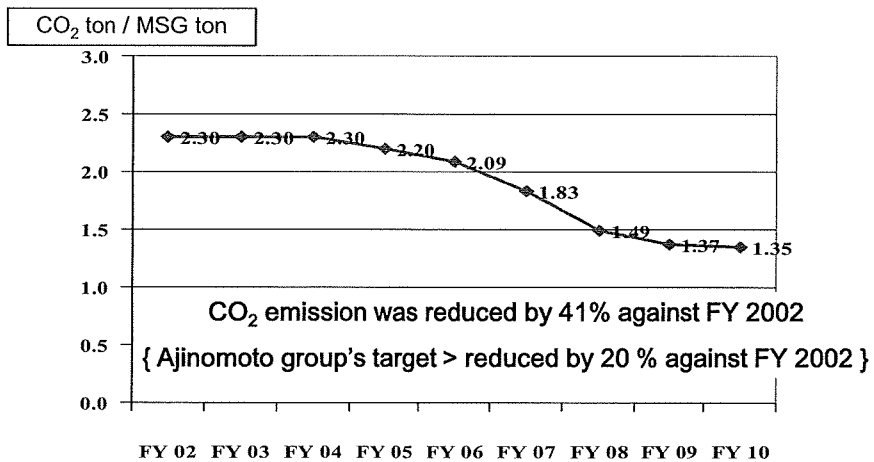
Natural Gas Cogeneration System :PPD Factory

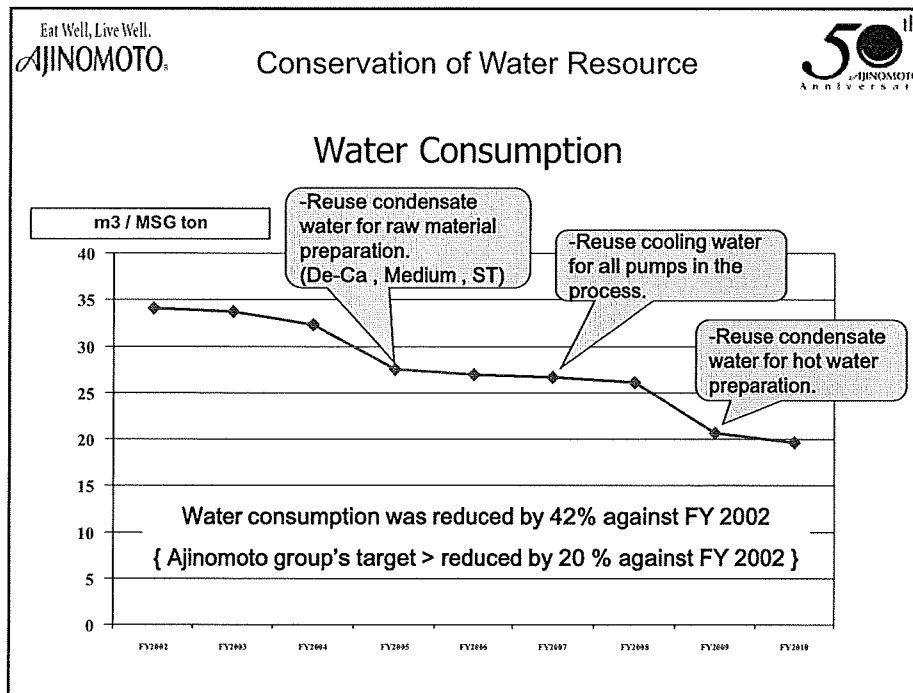
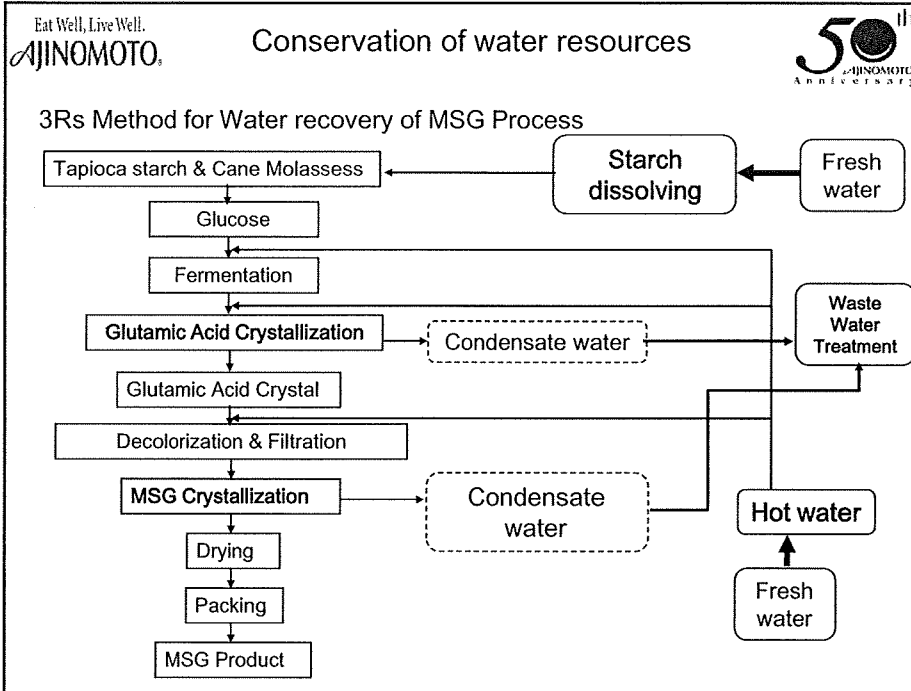
CO₂ emission reduced by 22,000 CO₂ tons / year



“Zero Emission”

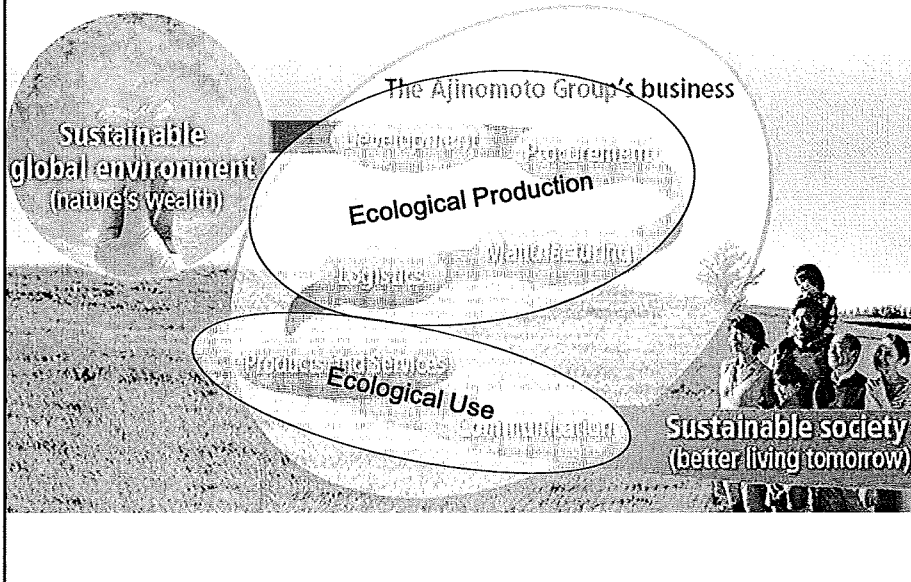
CO₂ Reduction: PPD Factory





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THANK YOU VERY MUCH

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