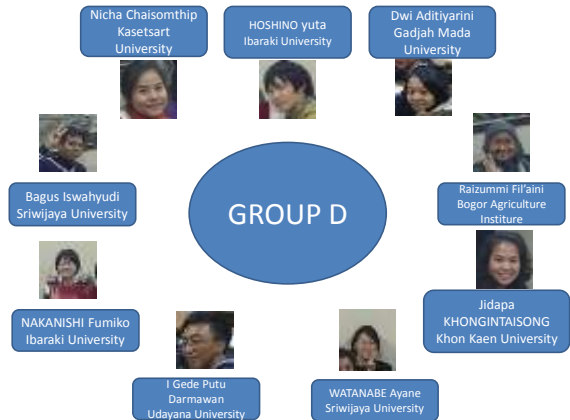


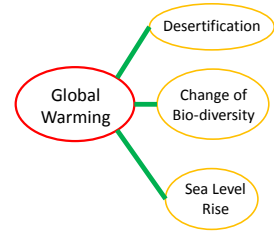
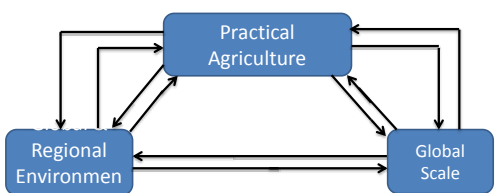
International Winter Course Program for
**Practical Agricultural Sciences Towards
 Regional Sustainability 2015**



29th November – 4th December 2015



Global environmental problems



Global Warming

Factors
 Elimination of greenhouse effect gas
 (CO₂, CH₄, NOx)



Why do elimination occur?

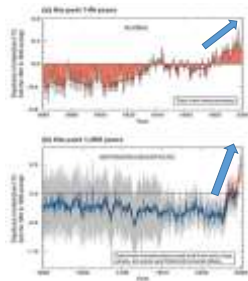
- Burning fossil fuel
- Produced by microbial activity of carbothermic reduction and transmethylation in paddy and ruminants.
- Nitrification activity of microorganism in soil.

Desertification



- The causes are the global warming and human factors.
- Desert area and areas vulnerable to desertification account for 1/4 of the earth.
- Desertification is progressing 60000 square kilometers per year.

Variations of the earth's surface temperature



In late 1950s
ocean temperatures rising

Sea level rising
0.1m ~ 0.2m



From IPCC, 2001

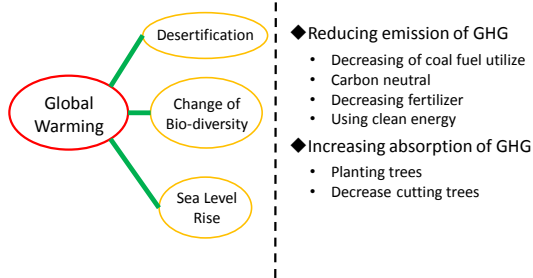
Problems of Biodiversity change

If bio diversity changes....

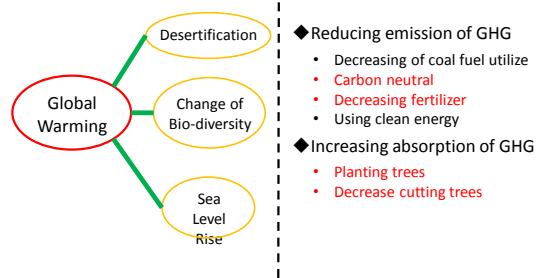
1. It is difficult to maintain the complex ecosystem.
2. Leading to the loss of food or fresh water, needed for living things.
3. Lack of protection from natural disaster
4. To happen the mental and cultural loss.



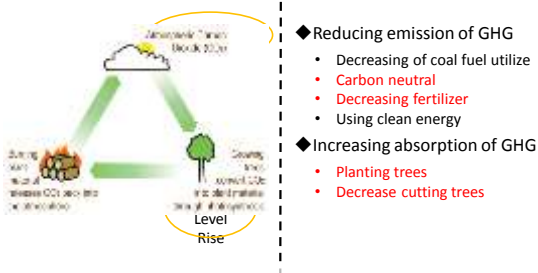
Solutions for stopping Global Warming



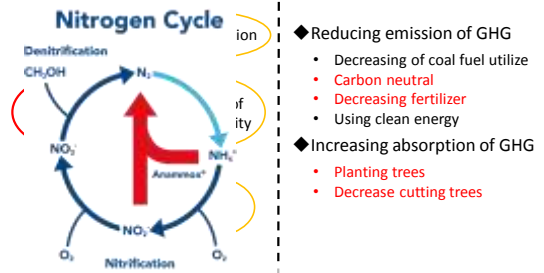
Solutions for stopping Global Warming



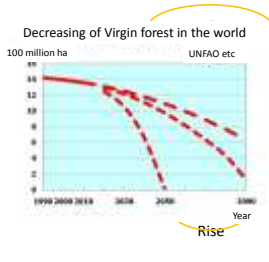
Solutions for stopping Global Warming



Solutions for stopping Global Warming



Solutions for stopping Global Warming



- ◆ Reducing emission of GHG
 - Decreasing of coal fuel utilize
 - Carbon neutral
 - Decreasing fertilizer
 - Using clean energy
- ◆ Increasing absorption of GHG
 - Planting trees
 - Decrease cutting trees

↓
We already have knowledges, technics and systems
But is it enough for improvement global warming?

*Global warming is caused by developed countries,
but damage to developing countries*



...he problems and help each other

ether

- Summary of Main Activities
1. International Collaborative Research
 2. Dispatch and Invitation of Researchers
 3. Research Planning and Evaluation
 4. Cooperation with Developing Regions



Water pollution in Thailand



Air pollution in Thailand



Soil pollution in Thailand



Alkaline soil and acid soil

HOW TO SOLVE THIS PROBLEM?

FLOOD&DROUGHT

- Resistant plant
- Breeding

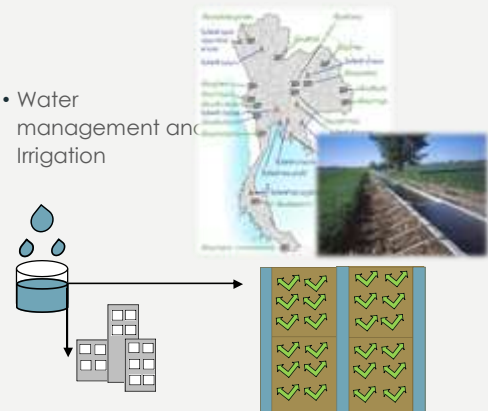


Sugarcane KK3

Sugarcane LK92-11

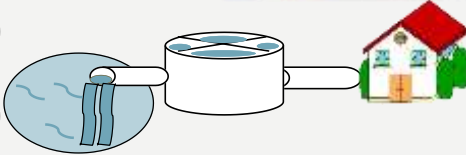
Rice Leb Mea Nang 111

- Water management and Irrigation

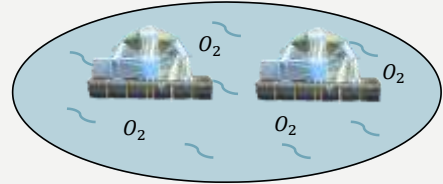


WATER POLLUTION

- Water treatment system

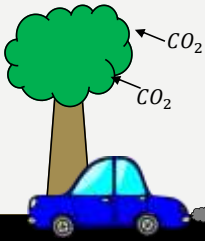


- Aerator or new technology



AIR POLLUTION

- Plant a tree for absorb pollution



Paper flower
Bougainvillea

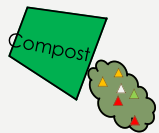


Golden shower
Cassia fistula

- Campaign to encourage people for tree planting and environment

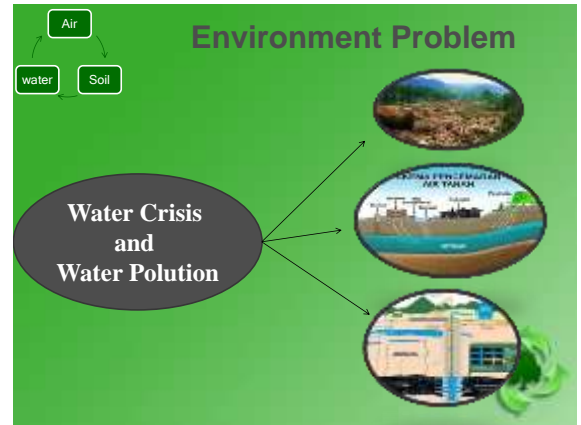
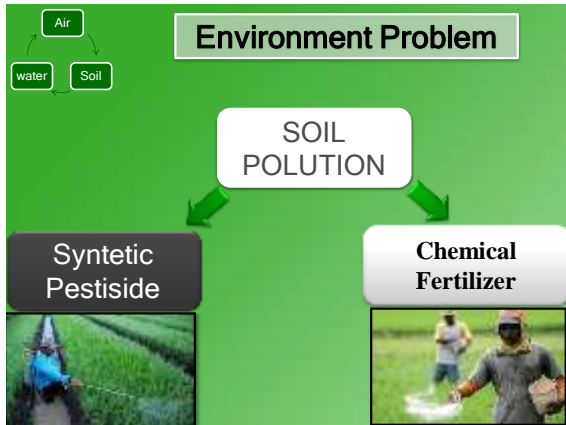
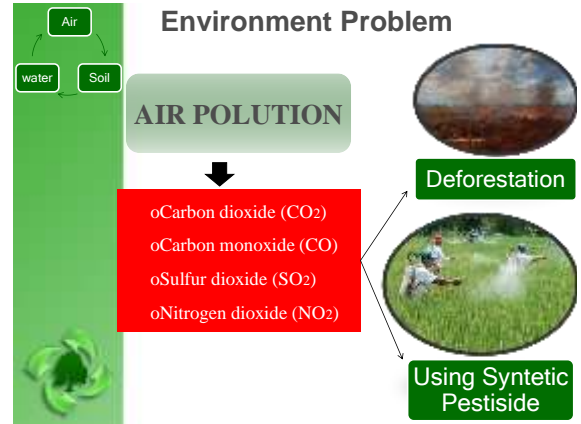


SOIL POLLUTION



Regional
Environment





How to solve the problems?

- Reforestation and Conservation
 - ✓ Facilitate Biosequestration of atmospheric CO₂
 - ✓ CSR (Corporate Social Responsibility) Programme of Company/Industries.
 - ✓ Social Community → WALHI etc.
- Environmental Policy from Government
 - ✓ UU No.32 Th.2009 : "Protection and Management of Environment"
 - ✓ Environment Ministry Regulation No. 6 Th. 2014 - <http://www.menlh.go.id/>.

How to solve the problems?

- Development of Green Infrastructure (Pugh et al, 2012).

NO₂

PM₁₀


How to solve the problems?




- Integrated Pest Management
 - ✓ Long term prevention of pest → managing ecosystem.
 - ✓ Identification and monitoring of the pest → management system.
 - ✓ Combination of management approach → greater effectiveness.




How to solve the problems?

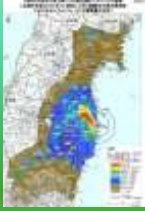


- ✓ Pest Management Approach
 - ❖ Biological Control → the use of natural enemies.
 - ❖ Cultural Control → intermittent irrigation
 - ❖ Mechanical and Physical Control → traps for rodent and steam sterilization.
 - ❖ Chemical Control → the use of pesticide



REGIONAL ENVIRONMENT PROBLEM IN JAPAN

Radiocesium contamination in soil


2011.3.11
magnitude 9.0 earthquake

FDNPP accident


↓

radionuclides released

Soil and Farm products contamination




long-lived radionuclides
¹³⁴Cs: half-life= 2.06 years
¹³⁷Cs: half-life= 30.2 years



Standard limits for Radionuclides	
Category	Limit
Farm products (Food)	100Bq/kg
Manure/Compost	400Bq/kg
Feed for livestock	300Bq/kg

Ministry of Health, Labor and Welfare



Decreasing concentration radioactives

However...

Negative rumor

SOLUTION

Decontamination from soil

- Remove contaminated surface soils.
- There are study results that tillage can reduce the radioactive contaminations of farm products.

It is necessary to study a more effective decontamination method.

This experience in Japan may conjugate in the future when similar damage occurred in other countries

Conclusion

Effect for the world : Positive effect and Negative effect

Positive effect : fulfill for human food demand

Negative effect : can produce GHG and water pollution

Problem solving for every region is important to reduce the negative effect

THANK YOU

