INTERNATIONAL WORKSHOP ON KYUSEI NATURE FARMING WITH EM TECHNOLOGY WITH EMPHASIS ON NATURE FARMING

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INTRODUCTION

Venue	: Kyusei Nature Farming Center, Saraburi, Thailand
Course Duration	: 13th to 16th March 2017
Number of Participants	: 40 person
Background of Participants	: from 8 countries (Thailand, Malaysia, Brunei, South Korea (Busan), Myanmar, Japan, Laos and Arizona)
Organizer	: Asia – Pacific Natural Agriculture Network (APNAN)
Cooperation with	: (1) International Nature Farming Research Center, Atami, Japan (INFRC) (2) EM Research Organization Okinawa, Japan (EMRO) (3) Sekai Kyuseikyo, Thailand (SKK)

INTRODUCTION

- Kyusei Nature Farming Center, Saraburi, Thailand (established in 1988), as a unit of Asia Agriculture Personnel Creation Institute of Thailand for focusing on the Nature Farming (method which was initially advocated by Mokichi Okada since 1935).
- In order to develop the cultivation technologies of Kyusei Nature Farming, EM technology (developed by Dr. Teruo Higa, professor emeritus from University of the Ryukyus, Okinawa, Japan) was used to emphasis the Nature Farming method through the technology social contribution by EMRO, which was established in 1994.
- The Nature Farming method blended effective microbes into a solution, that could enhance the fermentation processes of composting (organic farming), remove odor (waste/ livestock management), improve quality of water and helps to overcome the problems of intensive chemical farming and its impact on food, the environment and human health.

OBJECTIVE

- To understand the principles and philosophy of Kyusei Nature Farming and basic information on EM technology (including livestock and environment)
- Practically observe and implement the method

METHOD

- Lectures (concept of Ikudo in soil management, pest, disease and weed control)
- Field observations (composting center, livestock and fish pond)
- Hand's on (soil texture, soil profile and soil preparation for planting)
- Slideshows presentation from each country on activities related to Kyusei Nature Farming and EM technology
- Filed visit to Harmony Life Organic Farm (Kyusei Nature Farming Farm)
- Visited historical museum of Mokichi Okada

1st day – Explanation of Kyusei Nature Farming Practice in Saraburi Center

Kyusei Nature Farming Center
Sekai Kyuseikyo Thai Headquarter

Kanit Muangnil
Senior managing Director
Kyusei Nature Farming Center – Saraburi
July 2016

Kyusei Nature Farming Center, Saraburi

A unit of Asia agriculture personnel creation institute of Thailand.

Established in 1988 focusing on the farming method which was initially advocated by Mokichi Okada since 1935

International workshop for the Asia and Pacific

INFRC
International Nature Farming Research Center
Atami, Japan

SKK Thailand
Saraburi Center

EMRO
EM Research Organization
Okinawa, Japan

APNAN

" The Principle of Kyusei Nature Farming is to learn from the great power of nature which is beyond human understanding and to allow the power of the soil to be fully exhibited by taking good care of the soil "

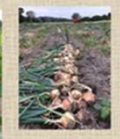
Mokichi Okada
(1882-1955)

" Nature Farming its final purpose is to lead humankind to a life in accordance with the Laws of Nature and to create a new civilization based on true health, prosperity and peace"

Mokichi Okada

Chili
from Saraburi farm

Onion
from Saraburi farm



Cabbage
from Saraburi farm

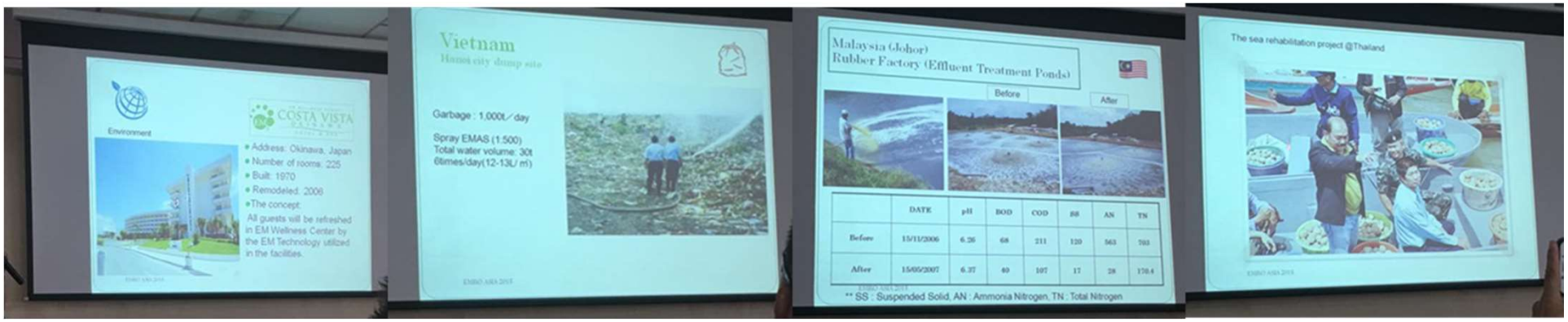
Sweet Potato
from Saraburi farm

Tomato and Cucumber
from Saraburi farm

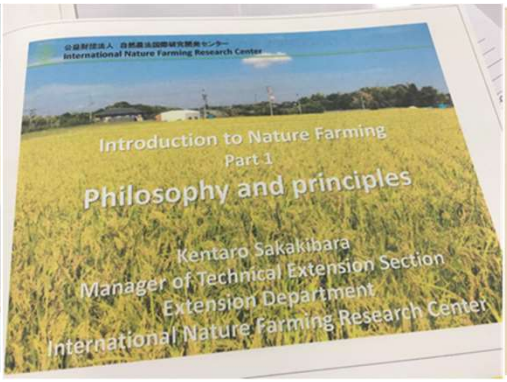
Fruits

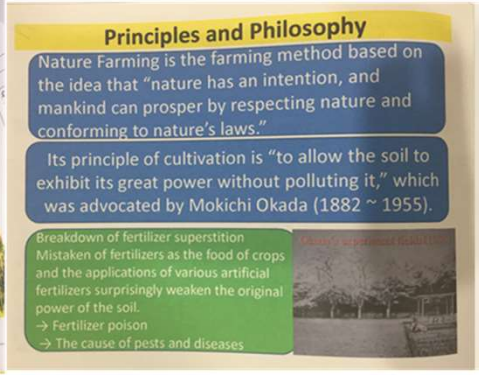
1st day – Explanation of Kyusei Nature Farming Practice in Saraburi Center

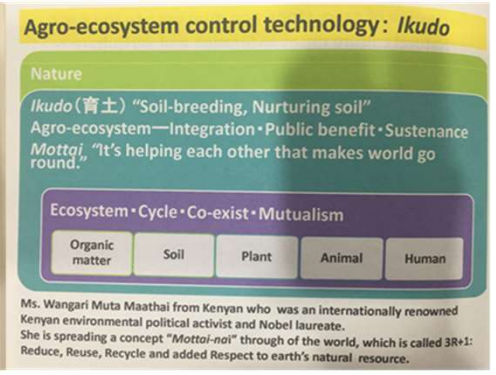
1st day – Nature Farming Network Around The World

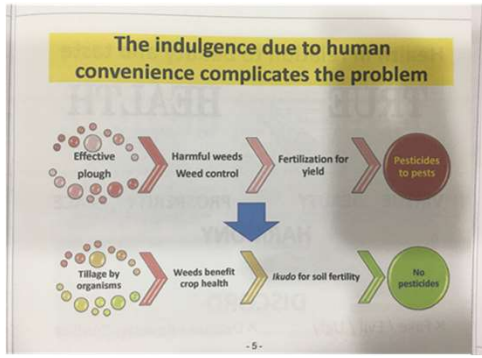


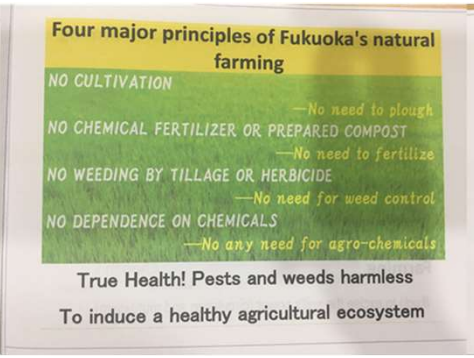
1st day– Principles and Philosophy of Nature Farming

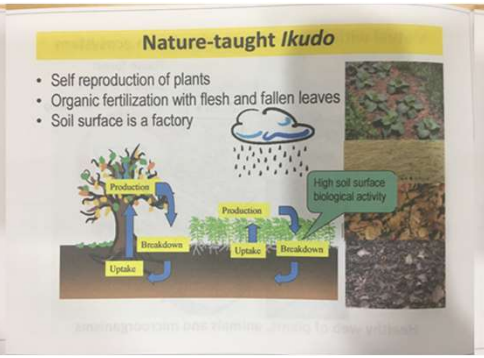


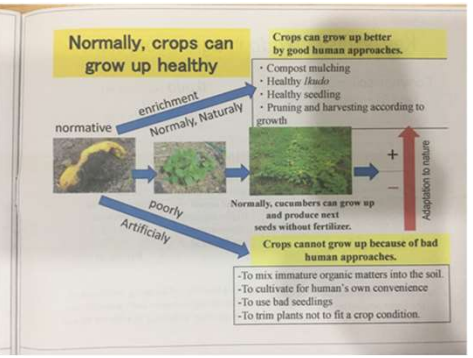


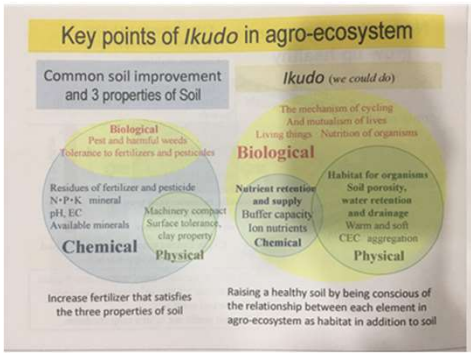


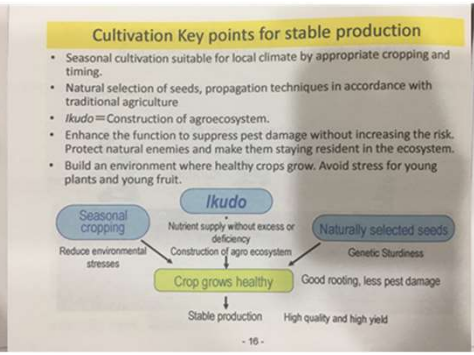


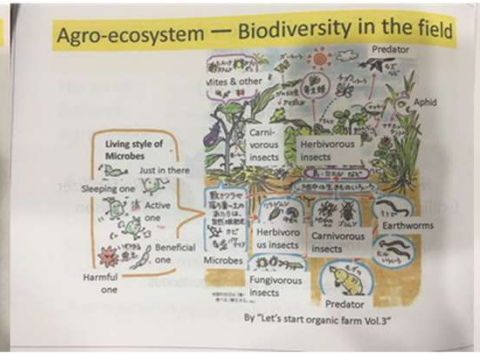


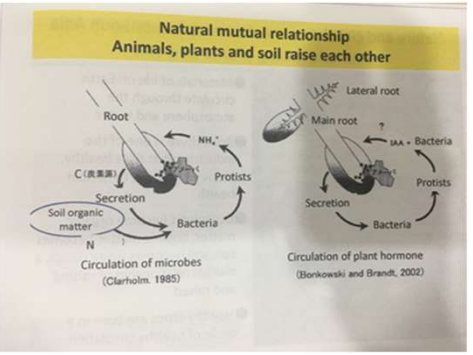








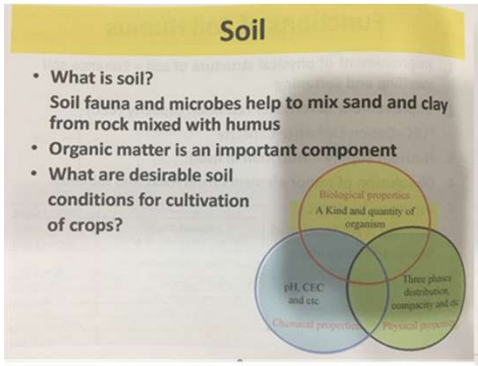


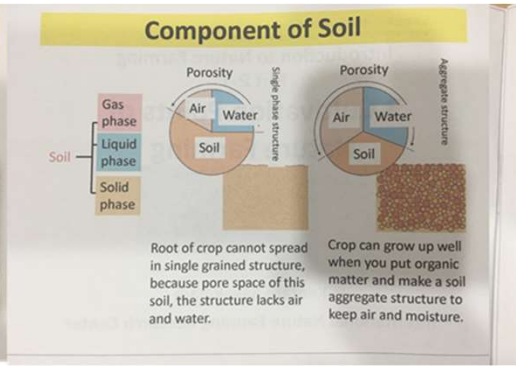


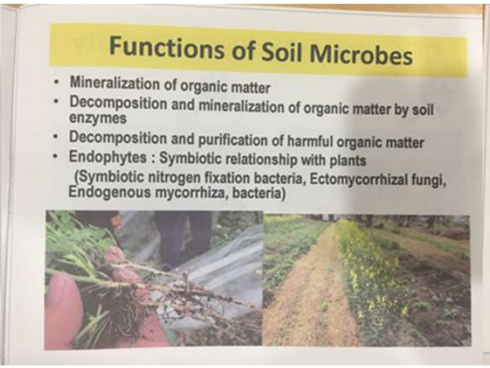
1st day – Visit Saraburi Center

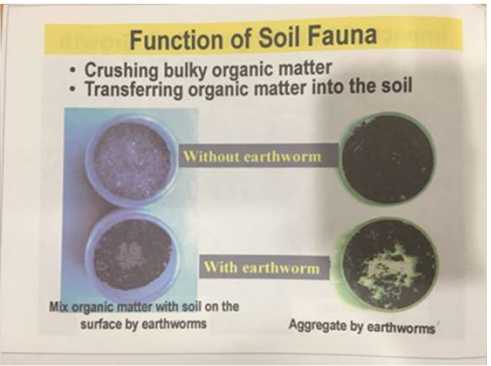
1st day – Visit Saraburi Center

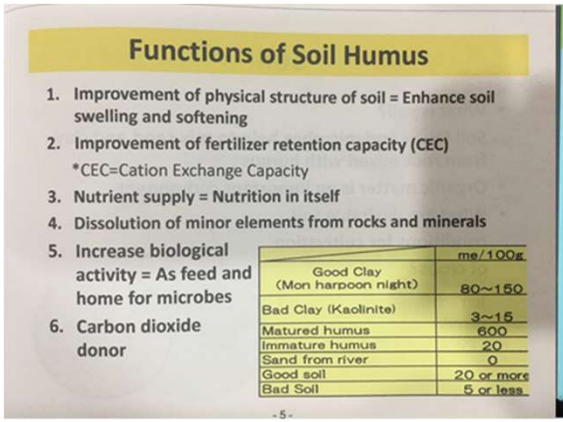
2nd day– Points of Cultivation for Stable Production (soil aggregate)

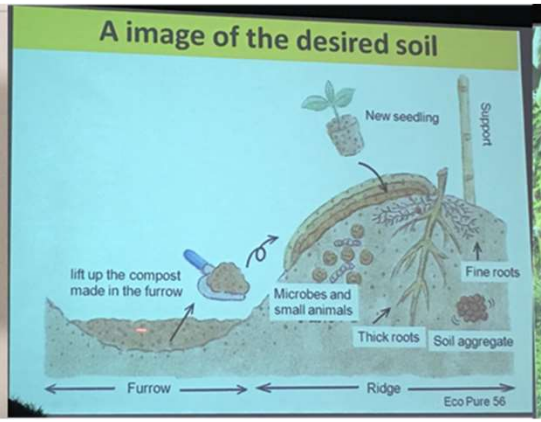












2nd day– Soil profile

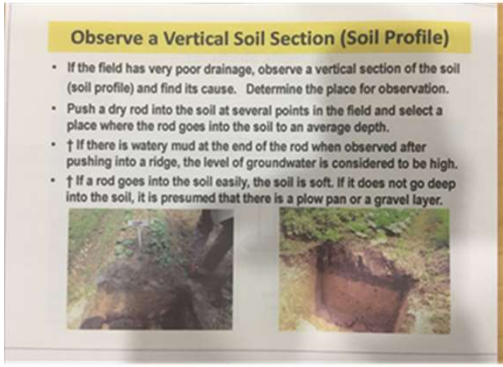


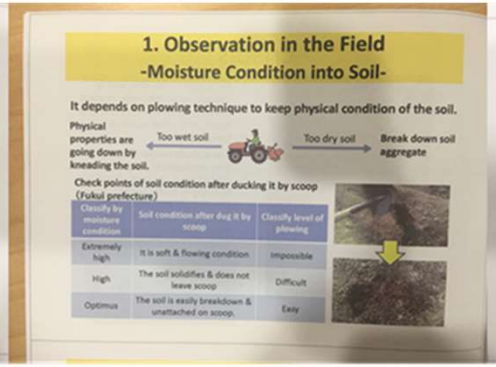


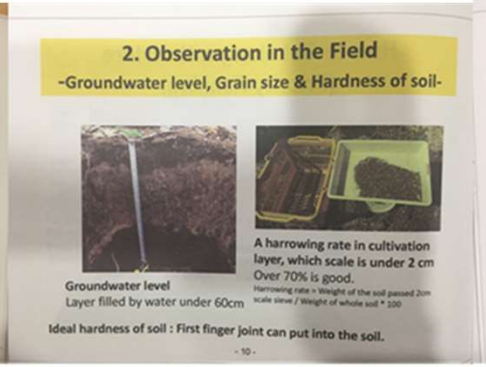


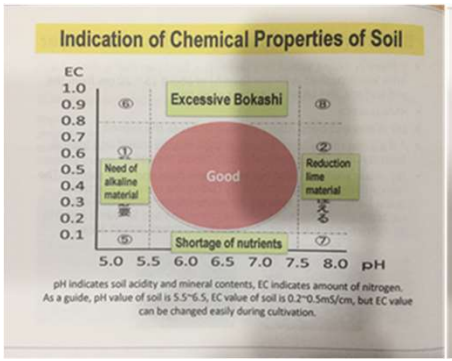


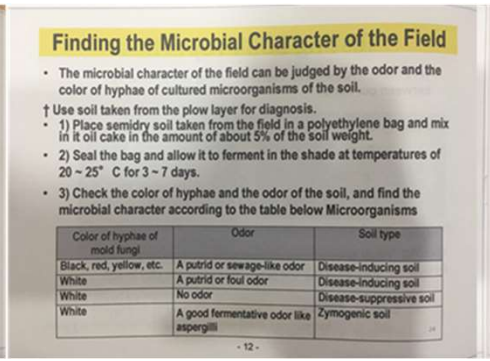

2nd day– Points of Cultivation for Stable Production (soil aggregate)

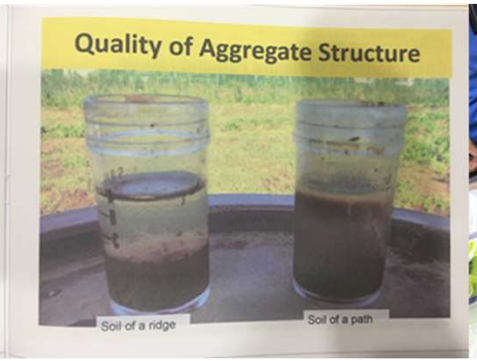






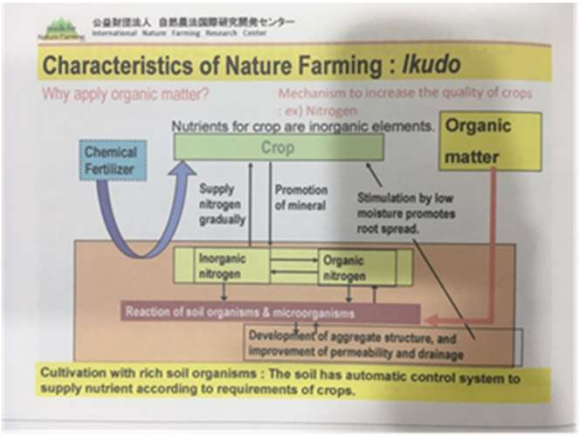


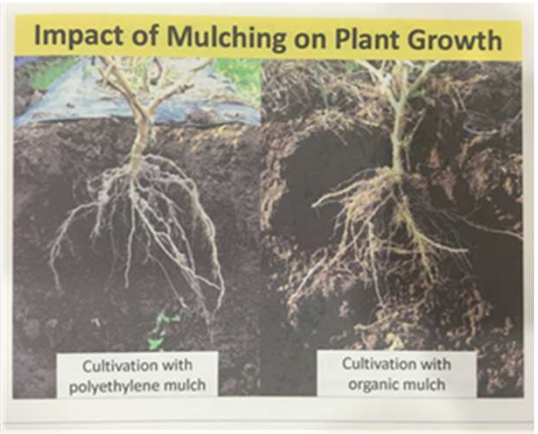


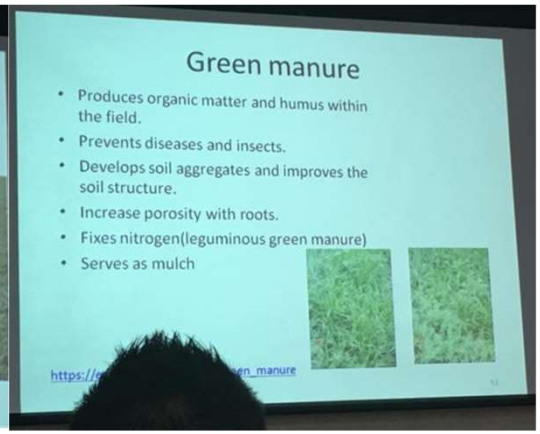


2nd day– Soil profile

2nd day– Crop cultivation on Nature Farming







Field observation – mulching & green manure

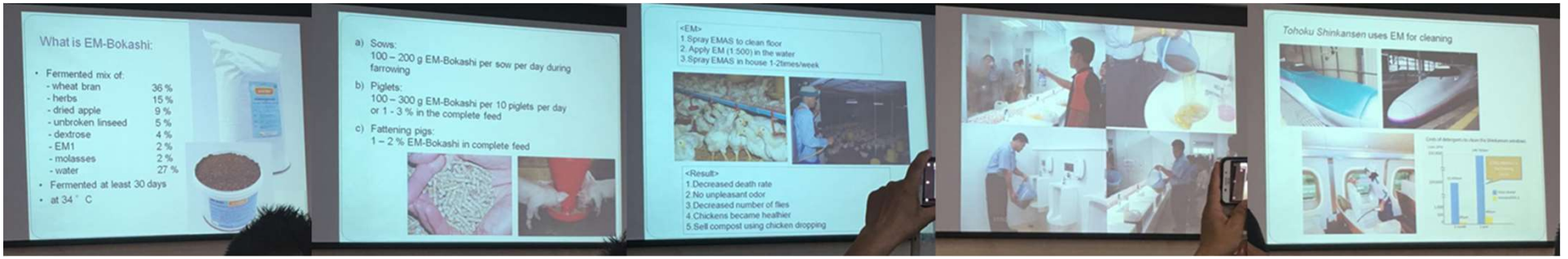
Living mulch

Field observation – mulching & green manure





2nd day– EM Basic Information



Soil Preparation “Kuratsuki”

Soil Preparation “Kuratsuki”



Kitchen waste


EM Solution





After 2 weeks

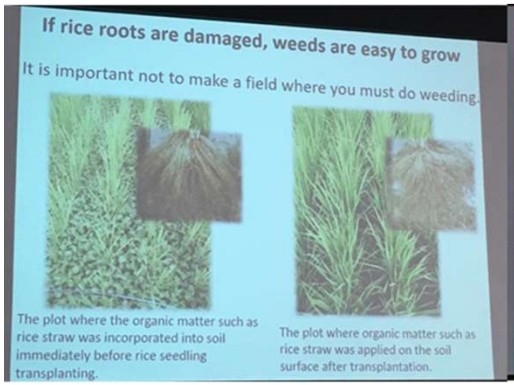
Field observation - paddy field

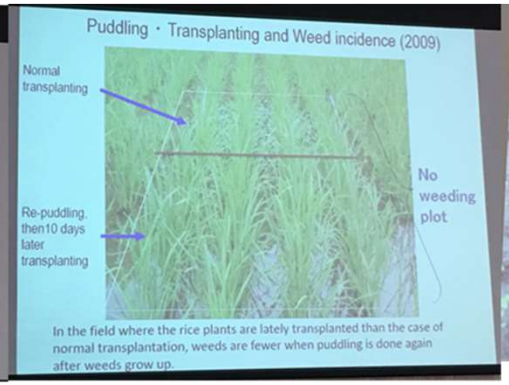
Pest control

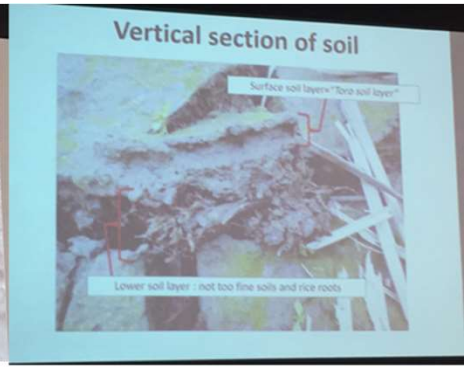
No weed

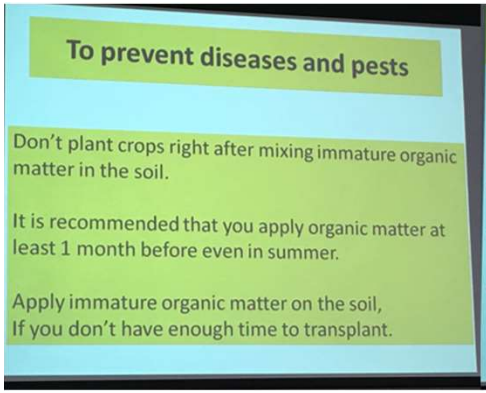
Hardpan

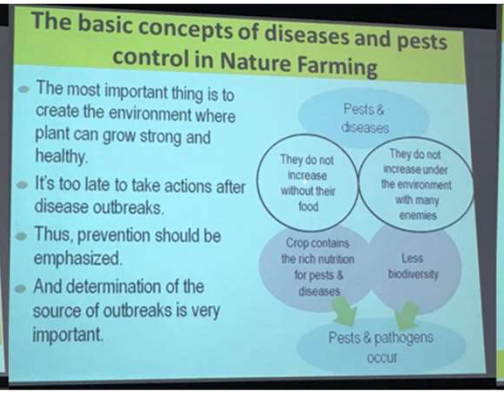
3rd day– Rice cultivation on Nature Farming (weed & pest control)

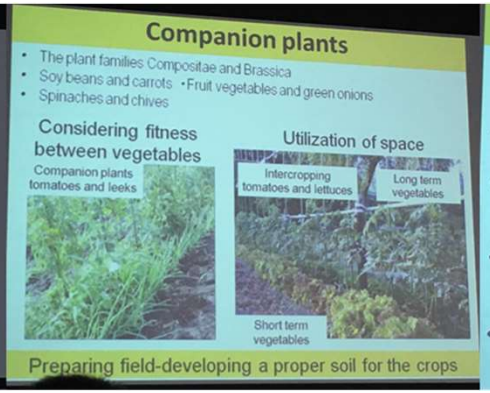


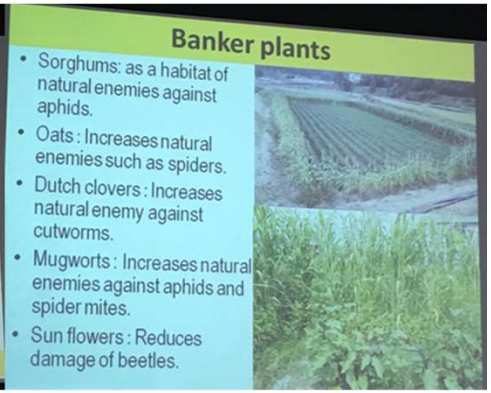












Field observation – Plant hormone & insect repellent

NOTES

Plant hormone & Insect Repellent

Water	100 litre	Covered & soak for 3 days.
Emas	1 litre	
Rice bran	1 litre	
Acacia pennata leaves + stem.		

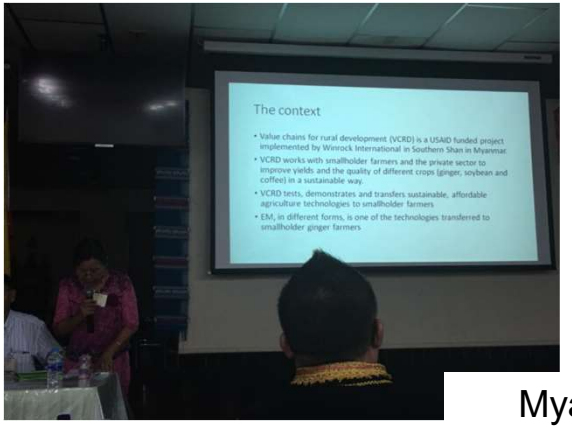
Use: Direct [no need to dilute] spray on leaves of plants.

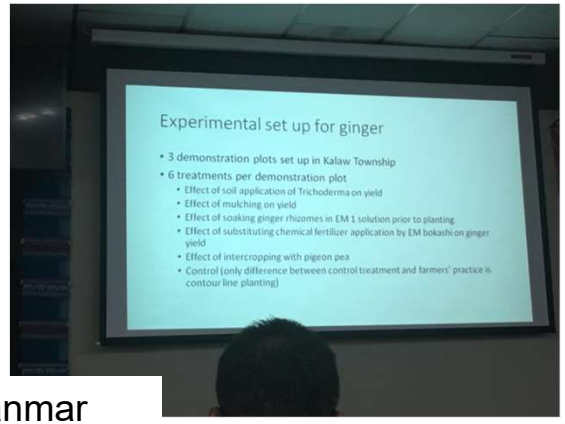
Thailand

Malaysia

Busan

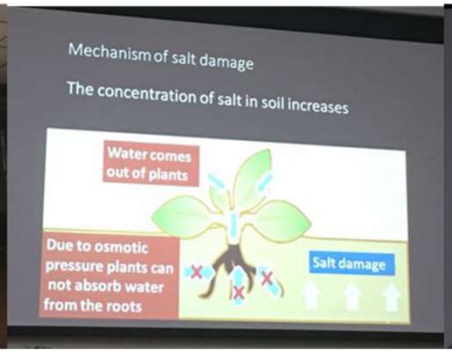
Arizona





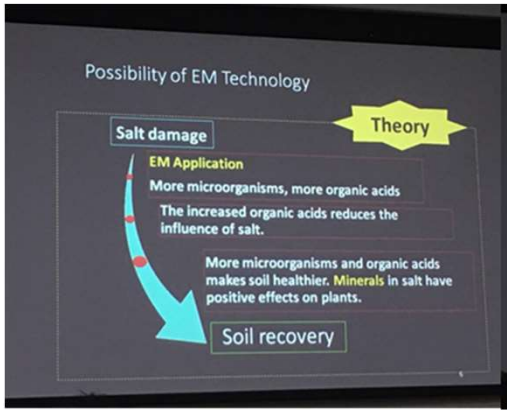
Myanmar

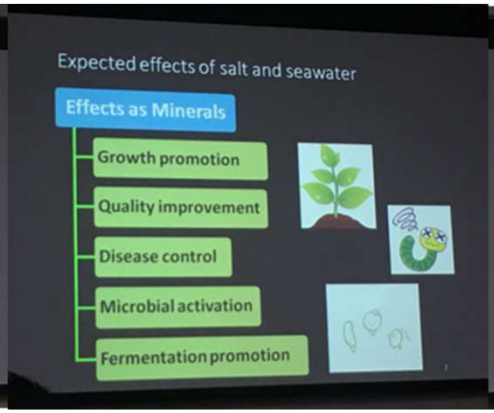

Use of salt and seawater
Japan

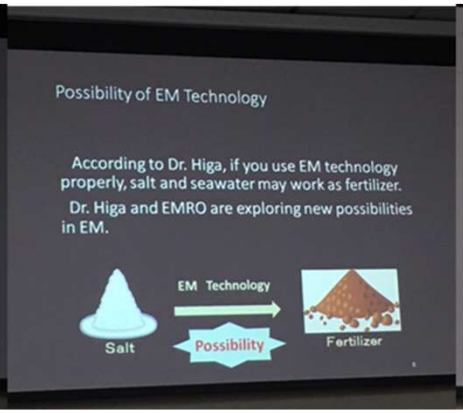

Mechanism of salt damage
The concentration of salt in soil increases
Water comes out of plants
Due to osmotic pressure plants can not absorb water from the roots
Salt damage

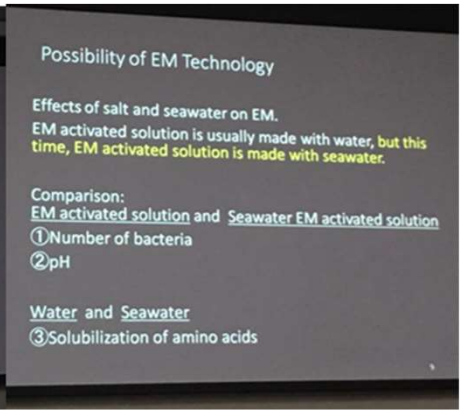

EM Technology Case study 1:
Salt-damaged Area in China
Before
After
EM Application

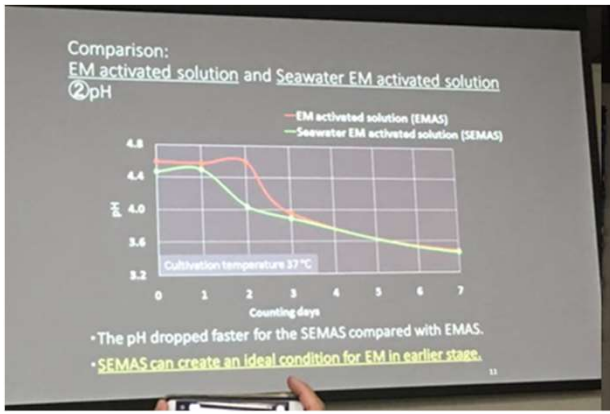

EM Technology Case study 2:
Salt-damaged area in Pakistan
EM TREATED PLOT-I
Before
After
EM Application

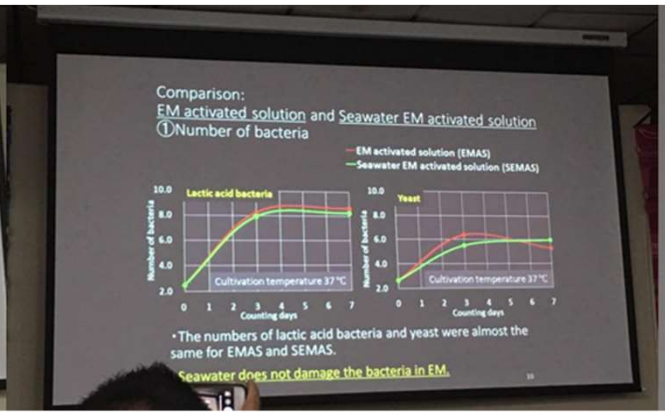

Possibility of EM Technology
Salt damage
Theory
EM Application
More microorganisms, more organic acids
The increased organic acids reduces the influence of salt.
More microorganisms and organic acids makes soil healthier. Minerals in salt have positive effects on plants.
Soil recovery

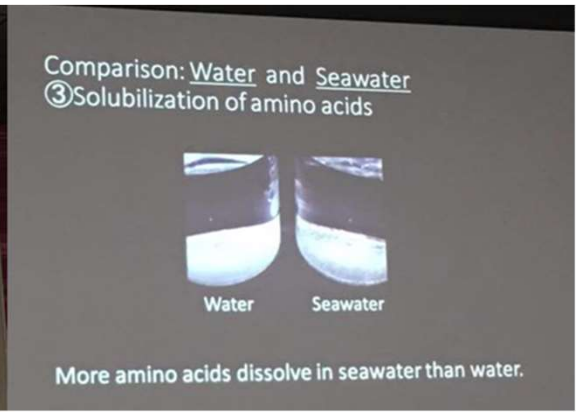

Expected effects of salt and seawater
Effects as Minerals
Growth promotion
Quality improvement
Disease control
Microbial activation
Fermentation promotion


Possibility of EM Technology
According to Dr. Higa, if you use EM technology properly, salt and seawater may work as fertilizer.
Dr. Higa and EMRO are exploring new possibilities in EM.
Salt
EM Technology
Possibility
Fertilizer


Possibility of EM Technology
Effects of salt and seawater on EM.
EM activated solution is usually made with water, but this time, EM activated solution is made with seawater.
Comparison:
EM activated solution and Seawater EM activated solution
①Number of bacteria
②pH
Water and Seawater
③Solubilization of amino acids


Comparison:
EM activated solution and Seawater EM activated solution
②pH
EM activated solution (EMAS)
Seawater EM activated solution (SEMAS)
pH
Cultivation temperature 37 °C
Counting days
•The pH dropped faster for the SEMAS compared with EMAS.
•SEMAS can create an ideal condition for EM in earlier stage.


Comparison:
EM activated solution and Seawater EM activated solution
①Number of bacteria
EM activated solution (EMAS)
Seawater EM activated solution (SEMAS)
Lactic acid bacteria
Yeast
Number of bacteria
Cultivation temperature 37 °C
Counting days
•The numbers of lactic acid bacteria and yeast were almost the same for EMAS and SEMAS.
Seawater does not damage the bacteria in EM.


Comparison: Water and Seawater
③Solubilization of amino acids
Water
Seawater
More amino acids dissolve in seawater than water.

Field trip –
Harmony Life Organic Farm











Field trip –
Harmony Life Organic Farm

Field trip – historical museum of Mokichi Okada







FINDINGS

- The workshop was conducted in informal session and all participants have chances to shared their experiences, views on issues relating to nature farming technology application especially in Asia-Pacific region.
- Participants have fully benefitted from this workshop on how to managing soil, controlling weed and pests in a natural way through theory and practical.
- This technology it is important for member countries in the way to respect nature, allow the living soil exhibit it's great potential and helps to build up a good condition for agro-ecosystem.

CONCLUSION

- Kyusei Nature Farming is a non-destructive method in which it relies largely on soil health in order to balance the insects, plants and microorganisms in ecosystem naturally.
- It also uses available (chemical-free) resources in producing quality crop yields.
- By using EM technology as an emphasis, it can help expedite the decomposition of various types of organic matter to potential compost and help enrich the soil with microbes and nutrients.
- It is also safe to use, can reduce the cost of agricultural inputs, and solve environmental problems such as eliminating stench odor in livestock and improving water quality.


ศูนย์เกษตรธรรมชาติคิวเซ
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THANK YOU