



Workshop on soil fertility assessment, soil improvement, and biotechnology and its application for soil improvement

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Outlines

- ▶ Background
- ▶ Programs of workshop
- ▶ Future plan
- ▶ Summary

Background

- ▶ Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS) project is started from 2017 to 2022.
- ▶ Therefore, the collaboration activities of Land Use Division (LUD), DoA, Myanmar and Land Development Department (LDD), Thailand was started at 2017.
- ▶ Delegates from Cambodia, Laos, Myanmar and Thailand were planned for ACMECS project activities for 2019 on 4 to 8 December 2018.

ACMECS Activities/Outputs 2019

Strategies	Activities	Outputs
1. Building capacity	1. An executive meeting and planning for activities in 2019 (<i>4-8 Dec 2018</i>)	An agreement for activities in 2019
	2. Workshop on “ <i>Analysis and evaluation of soil fertility, soil improvement and the use of biotechnology for soil fertility improvement</i> ” (<i>June 2019</i>)	<ul style="list-style-type: none"> - Soil management knowledge (e.g. technologies, practices) - Action plan for technology implementation
2. Knowledge sharing for land development	3. Project activity monitoring in Cambodia, Lao PDR and Myanmar (<i>Sept 2019</i>)	Training/ workshop/ demonstration center
	4. Project activity evaluation in Cambodia, Lao PDR and Myanmar (<i>Sept 2019</i>)	Training/ workshop/ demonstration center
	5. Project reporting (<i>Sept 2019</i>)	Reports and documents

Building Capacity – Activity 2:

Workshop on soil fertility assessment, soil improvement, and biotechnology and its application for soil improvement

Discussion points

Qualification of participants required for the program

Technology areas of interest by countries

Expected outcomes from the workshop

Action plan for technology implementation

Any concerns, or obstacles for the implementation

Etc.

Programs of workshop

Day 1 Activities

▶ Visiting soil museum at LDD



Day 1 Activities

▶ Visiting soil museum at LDD



Day 1 Activities...

Soil fertility analysis and assessment (Dr. Nattaporn Prakonkep)

- ▶ Soil fertility ratings based on **soil test values**
- ▶ Importance of **Parameters** and **methods**
- ▶ Collecting **representative soil samples**

Day 1 Activities...

► Soil laboratory visit



Visit in soil laboratory

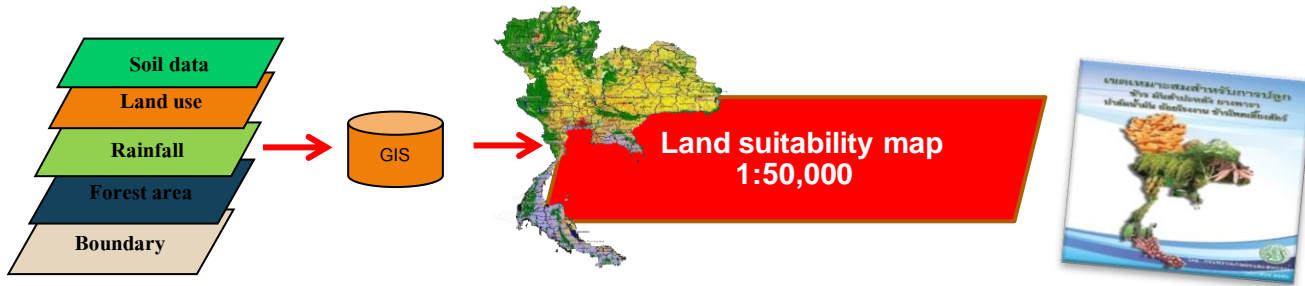


Demonstration of soil test kit

Day 1 Activities...

Soil problems, soil management, and soil improvement (Dr. Pramote Yamclee)

- ▶ Status of national soil resources
- ▶ Main issues and soil threats
- ▶ National priority and LDD activities towards SLM



Day 1 Activities...

Soil and water conservation, and utilization of vetiver grass for soil and water conservation (Dr. Pitayakon Limtong)

- ▶ Vetiver applications in Thailand
- ▶ Vetiver propagation

Types of vetiver grass



Vetiveria zizanioides



Vetiveria nemoralis



Root system of vertiver grass

Utilization of vetiver grass



Day 2 Activities

Introduction to microbial products

- ▶ Study research and develop microorganism
- ▶ Produce microbial products for increasing potential of agricultural productivity as well as environmental friendly
- ▶ Distribute microbial products to farmers

LDD Microbial Products

for Increasing Crop Production in Thailand

Soil fertility



Super LDD 1

Super LDD 2

Super LDD 9

LDD 11 for green manure

Bio-fertilizer LDD 12

Bio-control



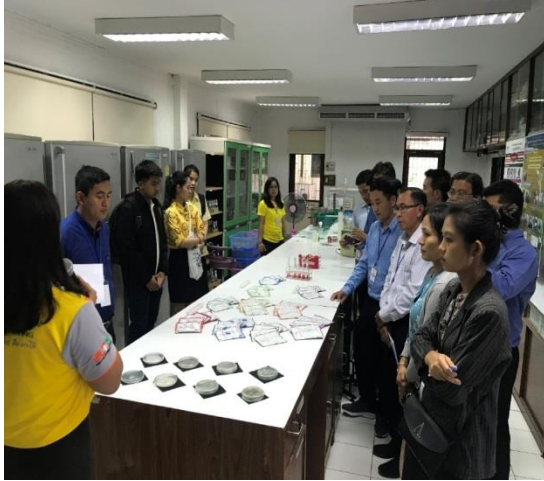
Super LDD 3
Super LDD 7

Environment



Super LDD 6

Day 2 Activities...



Study in microbiology laboratory

Day 2 Activities...



Demonstration of compost production by using LDD microbial product

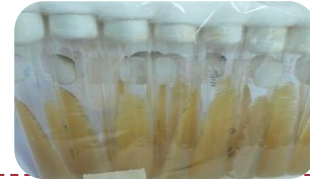
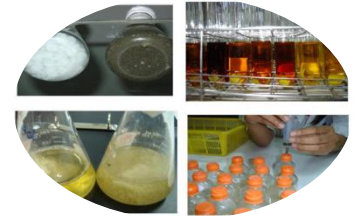
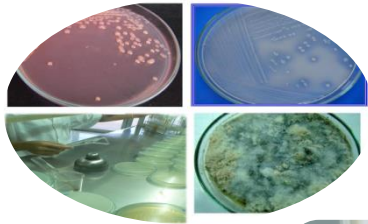
Isolate and Screening Step

Soil, organic materials sampling



Effective microorganisms isolation and screening

A study on the effectiveness of microorganisms



stock culture collection

effective inoculums

Efficiency testing

Microbial activated LDD products

Test of Activities



Quantification of microorganisms



Survival time of microbial activator LDD products



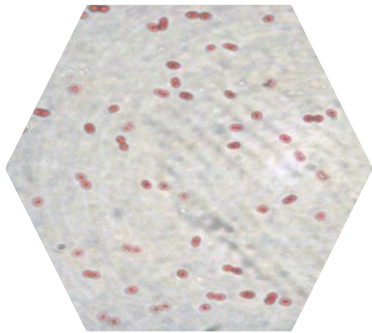
High Quality Compost Formula

Raw Materials	Formula 1	Formula 2	Formula 3	Formula 4	Formula 5
Soil bean meal	40 kg	40 kg	40 kg	-	40 kg
Fish meal	-	-	-	30 kg	-
Bran	10 kg	10 kg	10 kg	-	10 kg
Farmyard manure	10 kg	10 kg	10 kg	30 kg	10 kg
Rock phosphate	24 kg	24 kg	40 kg	24 kg	24 kg
Bone meal	8 kg	16 kg	-	-	-
Guano	8 kg	-	-	16 kg	16 kg
Super LDD 1	1 package (100 g)	1 package (100 g)	1 package (100 g)	1 package (100 g)	1 package (100 g)
Super LDD 3	1 package (25 g)	1 package (25 g)	1 package (25 g)	1 package (25 g)	1 package (25 g)
Super LDD 9	1 package (25 g)	1 package (25 g)	1 package (25 g)	1 package (25 g)	1 package (25 g)

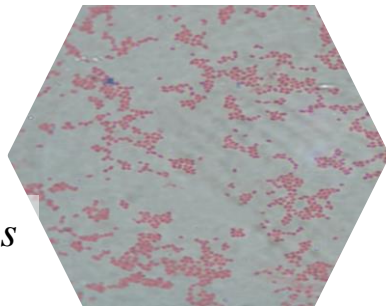


Bio-fertilizer LDD 12

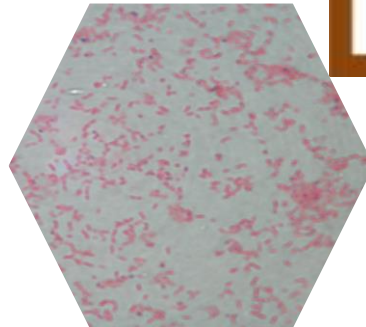
A group of effective microorganisms can produce nutrient element or convert insoluble of inorganic compounds to soluble form to increase soil fertility especially N, P, K and produce plant growth hormone to enhance plant growth.



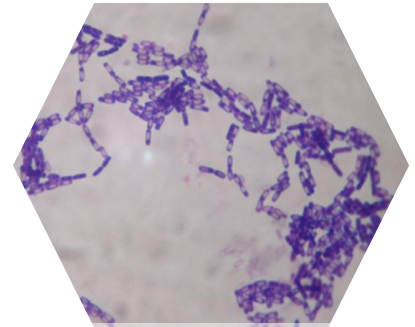
Azotobacter tropicalis



Burkholderia unamae



Bacillus subtilis



Azotobacter chroococcum

Raw material to biofertilizer LDD 12 culture

Compost 300 kg

Rice bran 3 kg

Biofertilizer LDD 12 1package (100 g)



Day 3 Activities: Soil doctor program



Study visit at the learning center and volunteer soil doctor in Khlon
Khuean district, Chachoengsao province

Day 4 Activities: Study visit for cassava plantation



Study visit at cassava plantation at Rayong Research Center, Rayong province

Day 4 Activities...



Study visit at the learning center and volunteer soil doctor, Rayong province

Day 5: Activities: Developing of Myanmar's action plan



Presentation and discussion of country's action plan

Action plan (2019-2020)

No	Activities	Outcomes	Time
1	Soil Mapping	Improve existing soil database and soil mapping in LUD, DOA	25-31 Aug 2019
2	Soil Microbiology	Biotechnology Future production and utilization of bio products	25-31 Aug 2019
3	LDD Soil test Kit	Improve assessment of soil fertility management level at local level	25-31 Aug 2019
4	Executive meeting	Planning action plan for 2020 Field visit for identifying suitable soil and water conservation in project area	15-21 Sept 2019

Thank you for your attention!

