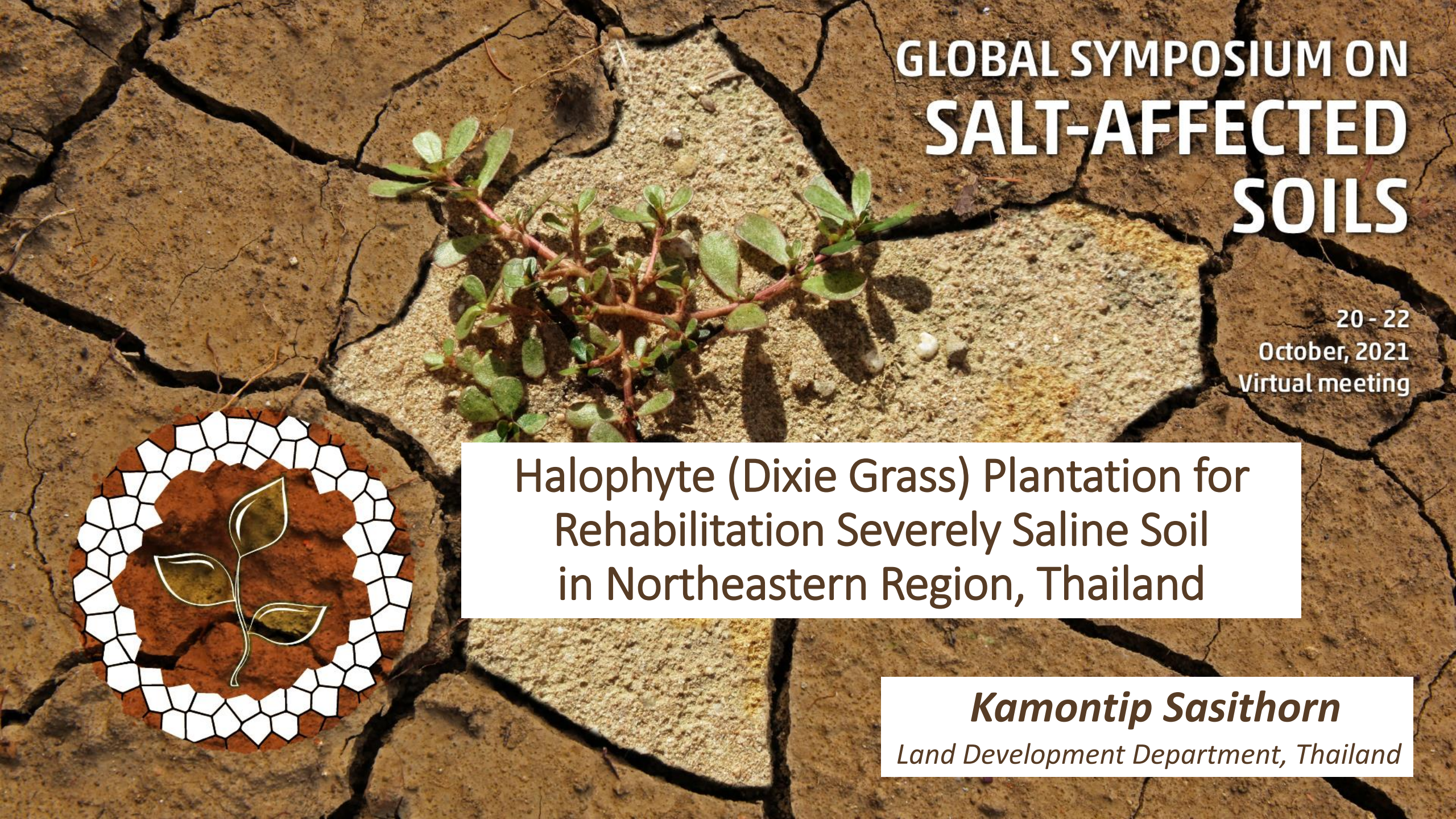
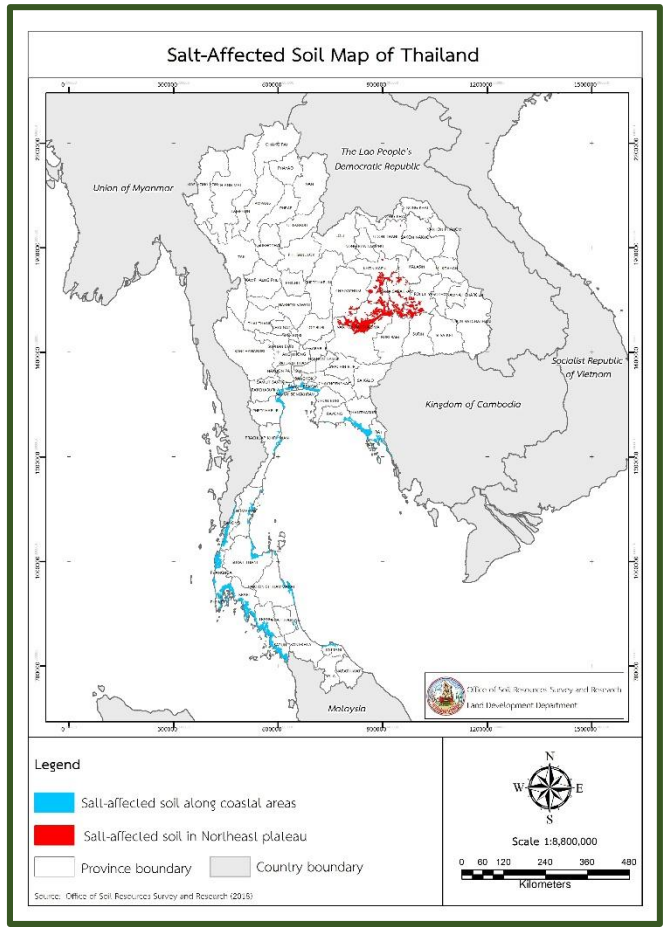


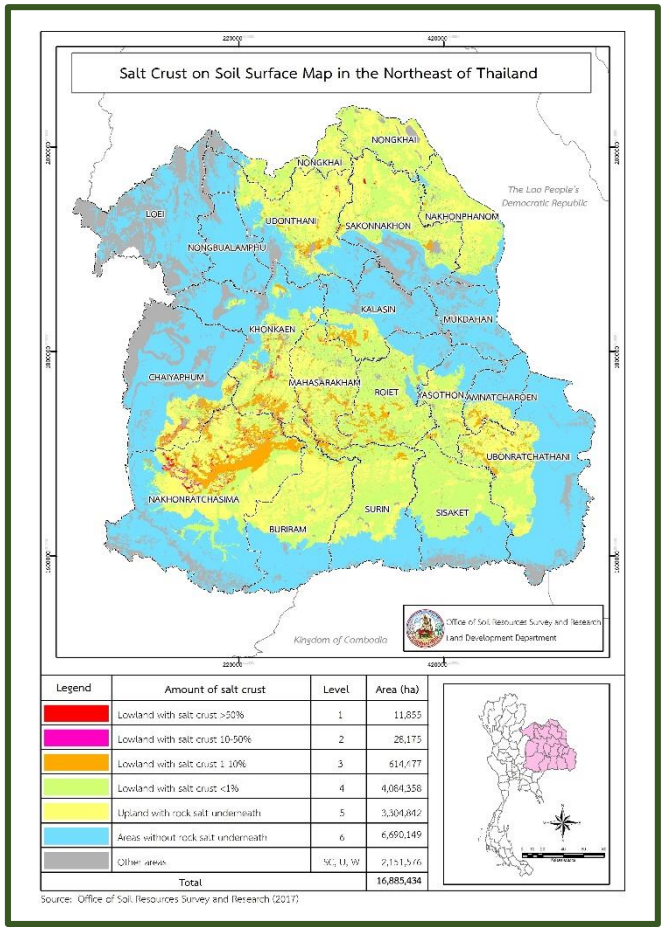
Halophyte (Dixie Grass) Plantation for Rehabilitation Severely Saline Soil in Northeastern Region, Thailand

Kamontip Sasithorn

Land Development Department, Thailand

In northeast Thailand, saline soil covers an area of 395,000 hectares. Salinity causes major problems in farmer's soils and crops, remediation and management practices are required.





Management of inland saline soils

Management of saline soils depends upon the degree of salinity and specific salination processes through agronomic management, biological/chemical management and engineering management.

Management of slightly and moderately saline soils

Management of severely saline soils

Management of the potential salt source area

Severely saline soils in Thailand

It considered as waste land.

Salt making.

It can be rehabilitated.

- Vegetative management: Utilization of salt tolerant species

Dixie grass

Acacia ampliceps

- Engineering management: leaching and drainage

Vegetative management by planting halophytes

- Utilization of salt tolerant species and varieties are recommended.
- This technology requires less investment and does not require maintenance.
- An effective strategy for soil remediation, ecological and environmental improvement.
- Some halophytes can also be used as forage crops.

Study on halophytes plant in Thailand

- Four exotic halophytes: *Sporobolus virginicus* both coarse type (Dixie grass) and smooth type (Smyrna grass), *Distichlis spicata* (Seabrook grass) and *Spartina patens* (Greorigia grass) were studied under severely saline soil in Thailand.
- These grasses could survive in severely saline soil and can tolerate salinity about 40 dS/m.
- The mechanisms of their tolerant ability include osmotic adjustment within the plant, salt exclusion, ion accumulation and sequestration excretion of salt via glands in plant leave or stem.
- Dixie grass is an exotic halophyte that could adapt to survive in severely saline soil and suitable for the Northeastern region in Thailand.

Dixie grass planting procedure

1

To cut Dixie grass 2-3 inches long and put it in a black plastic bag and plant when seedlings are 1 month old.

2

To dig a planting hole size 20×20×20 centimeters.

3

To apply 200 grams of cow manure per hole and chemical fertilizer (15-15-15) rate of 6.25 grams per hole then cover with rice husk.

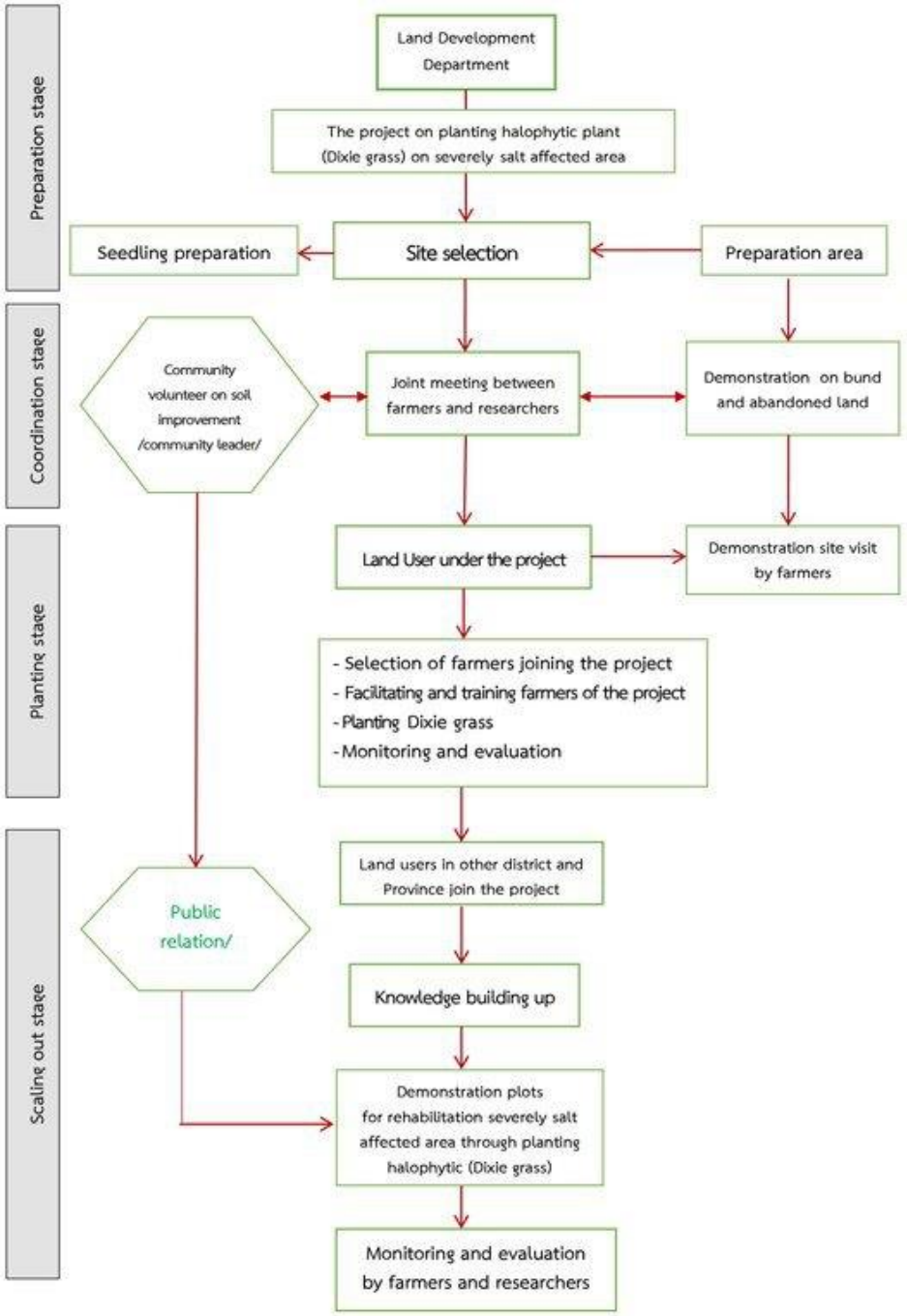
4

To plant at spacing of 20×20 centimeters.

5

To look after.

The ways of scaling up



Costs of the practice

Total costs for establishment of the technology is about 15,000 Baht per ha.

The costs of the practice include

- Land preparation.
- Labor cost for planting Dixie grass.
- Plant material as Dixie seedling cost (10,000 plants per ha) and fertilizers as compost and chemical fertilizers.

The positive impact of the practice

- The severely saline soil was rehabilitated from the Dixie grass planting for a better environment, salinity obviously decreased.
- The soils are less saline that induces biodiversity of both fauna and flora such as birds, butterflies, rats, earthworms and native flowers.
- The farmers can use their land more extensively rather leave it barren.

Others benefits of the practice

- Dixie grasses can be used as cattle feed.
- The land user can sell the Dixie shoots for propagation to Land Development Department.
- The migration for job to big cities is reduced.

Case study

Mr. Charong Munkarn, farmer

An example of successful farmer participating in the project located at 6 Moo 8 Kutchok sub-district, Buayai district, Nakhon Ratchasima province.

Corrective and sustainable guidelines

Building a network.

Demonstration plots.

To raise awareness and participation in the rehabilitation.

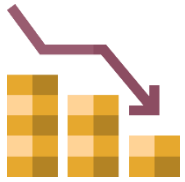
Creating a model from successful farmers.

Staff must continuously educate and publicize the project.

Potential barrier for adaption

Take along time to find success.

Farmers lack of motivation.



Poor rate of return.

Farmland is owned by capitalists.

Acknowledgements

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-Land Development Regional Office 3, Nakhorn Ratchasima province: Mr. Chakkaphan Phaosrakhu and Ms. Phatranit Chuaysanoi

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Food and Agriculture Organization of the United Nations (FAO)

The World Overview of Conservation Approaches and Technologies (WOCAT)

GLOBAL SYMPOSIUM ON SALT-AFFECTED SOILS

20 - 22
October, 2021
Virtual meeting

Thank You