

7. Extension of using the green manure plant (sunn. hemp) in saline soils

1. General Information and description of best practice/technology

Information

Due to the fact that chemical fertilizers are currently expensive, farmers cannot afford to buy them sufficiently to meet the demand of plants. There is also shortage of materials to make compost. Therefore, green manure crops are materials for saline soil amendment suitably to increase organic matter and nitrogen to soil. This is because they are cheap when compared with using other types of organic matter. There are no residues. This aspect is good to the environment. Green manure is plant grown to be chopped and covered up into the soil in improving the soil in order to increase plant yields. This method can help release nitrogen to planted crops. This approach is pretty much focused on currently in the age of high costs. It is considered as an important method which makes people become aware of importance of reducing costs of production in improving soil qualities to increase plant yields. Moreover, this approach helps reduce soil salinity indirectly. In other words, soil properties are improved in terms of the fact that the soil becomes more friable. As a result, salt on the ground is washed off to the soil at the bottom more easily. There has been gathering of farmers in the area of Ban Kok Phrom , Non Thai sub-district, Non Thai district, Nakhon Ratchasima province and areas of sub-districts nearby because most farmers have an occupation of conducting rice farming mainly. Soil has low fertility due to problems regarding degradation of soils having been used for planting industrial crops for a long time. Therefore, this requires soil amendment in terms of physical, chemical and biological structures. Therefore, the outreach is to make farmers in the area know the benefits from plowing up and over to cover green manure plants, to demonstrate how to plough up and over to cover green manure plants correctly and suitably so that farmers can rely on themselves and can apply the knowledge in developing land in their own areas.

Initially, there were applicants applying to be members of the group accounting for 50 people. There is an operation committee consisting of 9 people. The establishment of the group replacing agricultural chemicals with organic substances. Strong Farmers Extension Group in the project of promoting organic substances use replacing agricultural chemicals.

Operating facility House No. 27, Moo 5, Ban Kok Phrom, Non Thai sub-district, Non Thai district, Nakhon Ratchasima province

Land user Mr. Mana Siangsunthia

Complier Ms. Wannaporn polsang Land Development Department

Partners

Ms. Areerat Wangkaew Land Development Department

Mrs.Pitchanun Raksasarp Land Development Department

Ms. Nakanisorn Nakpalatho Land Development Department

Mr.Mana Siangstantia Land Development Department

Reviewer Dr.Bunjirtluk Jintaridth

Dr. Prapa Taranet

Geographical location

Latitude 102.03417 Longitude 15.23985

Operation Start Date

The operation started in 2013.

Type of approach Natural agriculture, soil amendment with organic matter in the area with saline soil

2. Approach, aims, and enabling environment

Objectives of the approach

- 1.To build knowledge, understandings and farmers can access the technology of management and utilize areas with saline soil sustainably
2. To transfer knowledge regarding green manure plants (sunn hemp)-based saline soil management
3. To build networks and propagate knowledge to farmers and exchange experiences

Methods to be implemented

1. Training for transferring technical knowledge and demonstrating the use of green manure plants in areas with saline soil to increase rice yields
2. Establish a group, hold meetings for farmer groups and explain objectives
3. To scale up farmer groups using green manure plants in areas with saline soils in order to utilize areas with saline soils correctly and suitably according to academic principles and plan rice cultivation to keep up with climatic changes
4. To build networks regarding the use of green manure plants in areas with saline soils in Non Thai district and areas nearby

Procedures of operation

1. Land Development Department has extended the technology by organizing the project of training the course of soil amendment with green manure plants to increase organic matter and to transfer knowledge, techniques and to demonstrate use of green manure plants in areas with saline soil

2. To support factors of production and gather farmer groups to establish an association for exchanging knowledge and demonstrating use of green manure plants in areas with saline soil

3. Take group members for a study tour to see the way to increase rice products in areas with saline soil

3. Participation and roles of stakeholders involved

3.1 The stakeholders involving in this approach and the roles

Stakeholders or organizations involving with this approach	Identify stakeholders	Explain roles of stakeholders or organizations
Local land users or local community	Group members accounting for 50 people	Taking actions together to make the group and the network become strong in utilizing land correctly and suitably
SLM experts or agriculture consultants	Agriculturists and officers of Land Development Department	Give advice, knowledge and support factors of production in managing areas with saline soil continuously
Researchers	1. Agriculturists from Land Development Department 2. Students from Suranaree University of Technology	1. Monitor and assess saline soil management with organic matter together with water management in the area growing rice 2. Study and conduct research on prediction of soil salinity in the area for utilization from managing areas with saline soil in each period of the cultivation season

Local government	Non Thai Agriculture Marketing Organization Non Thai Informal Education	1. Participate and coordinate in establishing the group 2. Preparing the learning process of conducting agricultural farming through the method of natural agriculture
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3.2 Involvement of local land users or local communities in phases of the approach

Phase of the approach	Involvement of local land users or local communities	Identify those involved and explain activities
Initiative or motivation	Mobilize forces by themselves	Government agencies, group members transfer knowledge and take a study tour in order to implement learning and experiences in their own areas
Planning	Interaction and mobilize forces by themselves	Agriculturists and officers of Nakhon Ratchasima Land Development Station participate in planning to establish the group of using organic substances to replace agricultural chemicals.
Operation	Interaction and mobilize forces by themselves	The member group determines group rules and regulations together.
Monitoring or assessment	Interaction and mobilize forces by themselves	Monitor and check together with agriculturists and officers of Land Development Department

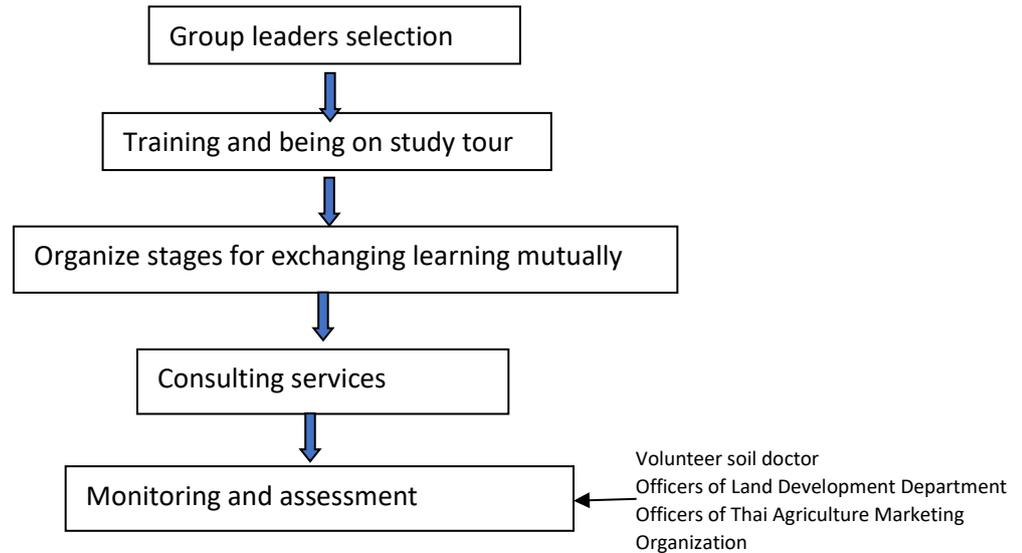


Diagram shows procedure of working

SLM technology Land users are the ones who are the main decision makers supported by SLM experts.

Decision-making is based on SLM knowledge assessment which has been well recorded (using data in making decisions) and from government agencies.

4. Technical support, building capabilities and knowledge management

1. Training has been set up for land users or other stakeholders with forms of training, namely farmers, students and interested people

- Visit actual places / farmers vs. farmers
- Experts give knowledge regarding soil collection and easy soil examination for fertility assessment.

- Use areas to demonstrate plowing up and over to cover stubbles and green manure plants

The training topic: Soil amendment with organic matter

2. Consulting services: Land users access consulting services provided by volunteer soil doctors stationed at Non Thai district and the government agency "Nakhon Ratchasima Land Development Station".

3. Strengthening agricultural sectors (organizational development)

- Non Thai Agricultural Marketing Organization, Nakhon Ratchasima province gives help and support in terms of meeting venues, facilitating collaboration

- Nakhon Ratchasima Land Development Station organizes training and supports factors of production, increases knowledge and regulations of establishing the group.

4. Central agencies by Land Management Research and Development Division monitor, check and make assessment. This is part of the approach to bring about use of areas with saline soil sustainably.

5. Research: There are students from Suranaree University of Technology who conduct research regarding prediction of soil salinity in the area for utilization from managing areas of saline soil in each period of the cultivation season.

4.1 Impact analysis and summary

4.1.1. Impact of the approach

The approach	Given answers
makes land users implement SLM technology and maintain conditions or not	moderately
improves cooperation and operation of SLM effectively or not	highly
mobilizes forces or improves financial sources access for SLM operation or not	moderately
improves knowledge and abilities of land users in conducting SLM or not	highly
builds or makes the institute become strong or brings about firm cooperation among stakeholders or not	moderately
promotes the youth or offspring of land users to participate in SLM or not	moderately
improves market access or not	highly
leads to sustainable land use or energy sources or not	highly
leads to employment opportunities or not	moderately

4.1.2 Main motivation of land users to implement SLM

- Costs of production per unit reduce and incomes increase
- Land degradation decreases
- Ecological and Environmental conscious
- SLM knowledge and skills increase

4.1.3 Sustainability of approach activities

Land users can make things practiced based on this approach sustainable whereby there are government agencies from Land Development Department giving advice continuously. Moreover, government and private agencies come to ask for advice to exchange learning and implement area-based achievement. They apply this approach together with soil and water conservation of other methods to change use of salt-tolerant plant varieties (rice) and halophytes. This approach makes farmers able to restore areas with saline soil by using costs which are not so high, but this takes long time. Natural agriculture has been conducted, which does not have to depend on chemical fertilizers. Incomes of farmers, the ecosystem and the environment in areas with saline soil have been improved. This is utilizing land sustainably, which is eco-friendly.

5. Conclusion

5.1 Strengths

1. Land users monitor climatic changes in predicting disasters to occur. This is used as data for planning cultivation. As a result, there will be no damage during yield harvesting.
2. Regarding knowledge in managing soil, water and plants for utilization in areas with saline soil, previously, rice farming could be conducted only and there was lack of knowledge of correct and suitable saline soil amendment until currently, costs of production can be reduced.
3. The fact that the wisdom obtained from learning and practices has been applied together with academic principles to restore areas with saline soil which are limitations and obstacles during the past ten years have been eliminated makes farmers utilize areas with saline soil sustainably.

5.2 Weakness

1. Before implementing the technology of planting sunn hemp as a green manure plant, the cultivation area is outside the irrigation zone. This has an effect on biomass of the sunn hemp.
2. The farmers who join the group are ready to learn and observe the surrounding environment, including keeping up with climatic changes all the time. At certain time, there is shortage of labor. There are problems of expensive oil. Therefore, establishing the group is the guideline to solve the mentioned problem.

Activities pictures



Upper left picture - lower Experts transfer knowledge regarding soil amendment with organic matter.

Upper right picture - lower Informal education regarding conducting cost-reducing rice farming and harvesting yields of salt-tolerant Hom Mali rice variety for reproduction of farmers of Saioar district, Non Thai district



Upper left picture - lower Plough and incorporate rice stubble before sowing sunn hemp and sunn hemp plots during the flowering period

Upper right picture lower The plot of salt-tolerant Hom Mali rice variety for the period of 60 days and harvesting the Hom Mali rice to be used as a rice variety for reproduction