

## 15. THE SOIL DOCTOR NETWORK BUILD SUSTAINABILITY IN AREAS WITH SALINE SOIL AND INTEGRATED FARMING SYSTEM

### 1. General Information and description of best practice/technology

#### Introduction

Most agricultural areas in Northeast Thailand rely on rain water and some areas are saline soil. The most cultivated plant is rice. Currently, there is climate variability. Rain distribution has changed. There has been labor shortage. The labor cost is high. Production factors cost and most farmers are old.

From the mentioned reason, adjusting the agricultural system from monoculture to integrated farming is another alternative for farmers because it is the method of helping farmers utilize their own cultivation areas most worthily. This method can build diversities of products and food security. Integrated farming is combining at least 2 types of agricultural farms in the same period of time. Balance and sustainability are built for agricultural areas.

Soil doctor network in the area of Ban Doo Noy, Non Daeng sub-district, Non Sila district, Khon Kaen province have transformed the area with rice cultivation conducted for only once a year into doing integrated farming through field level adjustment, adjusting levees for bigger sizes, digging ponds in the field together with drilling artesian wells and cropping for many types, namely rice, papayas, bananas and grasses for feeding animals on the levee, growing vegetables, cropping after rice harvesting, such as sunn hemp, sweet corn, sugar cane and raising cows etc.

**Operating facility** Ban Doo Noy, Moo 7, Non Daeng sub-district, Non Sila district, Khon Kaen province

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**Geographical location**

Latitude 102.676958 Longitude 16.016233

**Operation Start Date**

The operation started in 2017

**2. Classification of the best practice/technology**

**Objectives of the technology**

1. To build the network of soil doctors who use the integrated farming technology in using areas with saline soil sustainably.
2. To propagate knowledge regarding building food diversities for households in areas with saline.
3. To access assistance in aspects from government sectors and private sectors

**Methods of operation**

1. Land Development Department officers holds a meeting for discussion with soil doctors and network farmers to provide the technological data of land development, determining activities operation plans to be conducted and forms of managing areas with saline soil
2. Land Development Department officers conducts focused group interviewing with the soil doctor network to drive actual implementation of integrated farming in areas with saline soil
3. Land Development Department officers operate mutually with farmers of the soil doctor network, collect data in the area such as soil, water, plant sample collection and details of agricultural activities to analyze and summarize data with the farmer network after implementing the integrated farming technology in the area with saline soil as well as summarizing problems and extension development

### 3. Participation and roles of stakeholders involved

Stakeholders	Roles of stakeholders	Obtained benefits
The group of farmers of the soil doctor network	It is the one implementing the approach of using the integrated farming technology in its own agricultural areas. There are 10 members participating in the network.	Being able to conduct integrated farming in the area efficiently. There is a variety of agricultural activities, helping build food security and incomes to families.
Land Development Department officers	They are the ones who transfer knowledge, support production factors such as Sunn hemp seeds etc., including giving advice regarding putting in use correctly, suitably and mutually studying changes occurring in areas with saline soil	Being able to transfer knowledge to other areas and, develop and extend the technology of managing areas with saline soil suitably with social landscape.
Farmers and the interested general public	Participating in the field study to exchange knowledge in the prototype soil doctor plot and in the plot of network farmers	Applying knowledge to develop their own agricultural areas due to the fact that production factors can be made locally with prices not so high
Government agencies and local agencies	Are the ones supporting in terms of knowledge of other related areas	Being able to propagate knowledge and the technology in managing areas with saline soil to people who are interested in using it or to adjust in other areas

#### 4. Steps and activities of the operation

Steps of the operation	Activities	Supporting or being supported
1. Holding a meeting with network farmers	Giving technological data regarding to developing areas with saline soil and attending the meeting for discussion to determine the operation plan	Transferring knowledge to the network and the farmer group, giving related information in the area such as operated agricultural activities, information in terms of economy, society and the need of farmers
2. Planning the operation	Focused group interviewing, determining activities to be conducted and forms of managing areas with saline soil	Farmers receive support: Sunn hemp seeds and Land Development Department' products
3. Operation in the area	Actual implementation of the technology in areas with saline soil	Farmers receive training and transferring knowledge and practices
4. Monitoring and assessment	Collecting data in the area such as soil, water, plant sample collection and details of agricultural activities	Giving advice and attending focused group interviewing to collect and summarize data with the farmer network after implementing the technology in the area

## 5. Conclusion

### 1. Strong points: Viewpoints of land users

1. Having an opportunity to see managing the integrated farming area which has been achieved and being able to adjust it in their own areas
2. Having points of exchanging learning in the community, being able to access them easily
3. Having an opportunity to receive advice and exchange knowledge both from officers and the soil doctor network
4. Having an opportunity to receive support from government agencies and local agencies

### 2. Weakness: Viewpoints of land users

Requiring a period of time for at least 3 years until changes can be seen in areas of saline soil

### 3. Strength: Attitudes of compliers

1. Transferring the technology of the soil doctor network about self-reliance, family labor and factors in the farm. This helps reduce production costs.
2. Prototype soil doctors always provide knowledge data regarding production and give advice regarding suitable practices. This helps bring about security in occupation of the network group using integrated farming technology.

### 4. Weakness: Attitudes of compliers

Agricultural areas are still affected from water qualities for agriculture from artesian wells in terms of receiving brackish water during the dry season, Some farmers solve the problem by digging a pond in the field to pull water from the artesian well to be stored before using it in the agricultural plot.

## Activities pictures



**Fig. 1** Soil characteristics and salt stains found



**Fig 2** Giving advice to the group



**Fig. 3** Rice in the farmer's plot grown after plowing up and over Sunn hemp scraps



**Fig. 4** Planting papaya, bananas and grasses for feeding animals on the ridge after being adjusted for a bigger size





**Fig. 5-6** Growing Sunn hemp for storing seeds and sweet corn after harvesting rice



**Fig. 7** The artesian well pumps water with solar cells which farmers operate by themselves



**Fig. 8** The artesian well pumps water with solar cells together with the water distribution system supported by Department of Groundwater resources