14. EXTENDING PLANTING THE HALOPHYTIC GRASS (DIXIE GRASS) IN THE AREAS OF SEVERELY SALINE SOIL

1. General Information and description of best practice/technology

Introduction

The government promotes planting Dixie grass to control areas with severely saline soil as well as restoring the ecosystem and preventing salt distribution under the cooperation of the land owner, farmers, soil doctors, local authorities and experts in fields.

Regarding extending planting Dixie grass in the areas of salt-affected soils, Land Development Department, Ministry of Agriculture and Cooperatives has a project in restoring areas with severely saline soil by planting salt tolerant perennials and halophytic grasses in the northeastern part of Thailand. The project started in 1996 and has been operated. The project supports planting the halophytic grass (Dixie grass) on deserted areas with severely saline soil. The main objective is to disseminate to farmers to use the land for maximum benefits and to prevent saline soil distribution by planting Dixie grass to cover the ground, and to restore the ecosystem of salt-affected soil. The first activity is to do public hearing from people in the community, to specify the area severely affected from salt and to prepare demonstration plots on farmers' areas as a learning center. Then, cooperating with administrative organizations was conducted. Before preparing the demonstration plot, officers hold a meeting with farmers for brainstorming regarding weakness, strength, opportunities and obstacles of planting Dixie grass on areas with severely saline soil. The demonstration plot consists of activities for 4 steps as follows: Step 1- Preparing Dixie grass seedlings, selecting areas, preparing soil, public hearing and preparing demonstration plots at Dan Chang sub-district, Bua Yai district, Nakhon Ratchasima province in the area of severely saline soil; Step 2- Coordinating with researchers and farmers who are the owner of the area for planning together the operation and monitoring and assessing results on the operation; Step 3- When farmers are selected, the officers demonstrate the method of planting and propagating Dixie grass as well as taking farmers for the study tour in the achieved area in Northeastern Thailand; and Step 4 - Regarding the extension, officers will take farmers participating in the project for 3 years to come to extend and propagate results of the work with achievement of Mr. Chalong Munkarn. Previously, the area was very salty that plants could not be

planted. After 3 years of operation, it was found that the deserted area where Dixie grass is planted, there are other kinds of plants growing to cover the ground more than before. Rice can be cultivated. This makes farmers have secure incomes and reduces migration and labor to big cities. this project has made local authorities, officers, researchers and experts from Land Development Department work together in these area. Although the plant method does not require high expenses and takes time longer than the engineering method with high investment and fast results, farmers can practice the method of growing Dixie grass by themselves in their own area. When strength points in extending the results are assessed, it was found that having soil doctors, local administration organizations and farmers can access the source of Dixie grass seedlings easily and there are no expenses. The technology helps improve the environment of severely saline soil in Northeastern Thailand. Land Development Department agriculturalists and the community helping spread knowledge about planting Dixie grass continuously. Also, there are demonstration plots. For weakness points in extending the results, public relations are not made thoroughly, Land Development Department should coordinate with local administration organizations to help regarding public relations. Some farmers do not believe that Dixie grass can withstand salinity at the severely salty level and after cultivation salinity will decrease. Therefore, Land Development department officers should transfer knowledge and take these farmers to see achieved examples.

Operating facility Ban Don Pae, No. 5, Moo 8, Kud Jok sub-district, Bua Yai district, Nakhon Ratchasima province

Land user Chalong Munkarn,

Compiler Miss Kamolthip Sasithorn Land Development Department
Mr. Pairaj Pongvichien, Land Development Department
Mrs. Jutarat Ratanapanya, Land Development Department
Mr. Vinai Chombud, Land Development Department

Geographical location

Latitude 102.477 Longitude 15.556

Operation Start Date

The operation started in 1983 - 2012

2. Approach, aims, and enabling environment

2.1 objective of the approach

The main goal or objective of the approach is to promote land users to bring about agricultural maximum benefits in order to prevent saline soil distribution in areas with severely saline soil by growing Dixie grass as a cover crop and to restore the soil ecosystem severely affected from salt.

2.2 Conditions favorable for implementing the technology under this approach are as follows:

1) Land owners have guidelines for practices following successful neighbors.

2) Financial and service sources are Bank for Agriculture and Agricultural Cooperatives.

3) Local Administration Organizations are the supportive agency.

4) Coordination of volunteer soil doctors and community leaders in the area with farmers in the area

5) The government has a policy of preventing soil degradation.

6) Supporting the knowledge regarding sustainable management of areas with saline soil for land users

7) Providing budget to support farmers to participate in the project continuously in areas with saline soil

2.3 Decision-making in selecting the technology of managing land with saline soil sustainably

Experts of managing areas with saline soil sustainably are main decision makers by using data of the environment of areas with saline soil. Using the technology of soil management is suitable with solutions. There are guidelines for practices easy to understand which farmers can actually follow in the area. The decision is based on assessing farmers' knowledge about soil management and interest of participation in the project etc.

3. Participation and roles of stakeholders involved

Identifying stakeholders	How do implementing Stakeholders or organizations involve with this approach?	Explaining roles of stakeholders or organizations
Local land users or local community	Farmers participating in the project take the technology to be available in the area.	Planting halophytic grasses (Dixie grass) in areas of saline soil
Sub-district administration organization / municipality	Facilitating technology implementation	Support the project for achievement such as making public relations
Land Development Department	Being the agency which supports the operation	Supporting knowledge, allocating the budget
Researchers / Experts of sustainable land management	Being workers	Giving advice, promoting and transferring the technology
Government (planner and decision makers)	Project sponsor	Capital, planner, decision maker

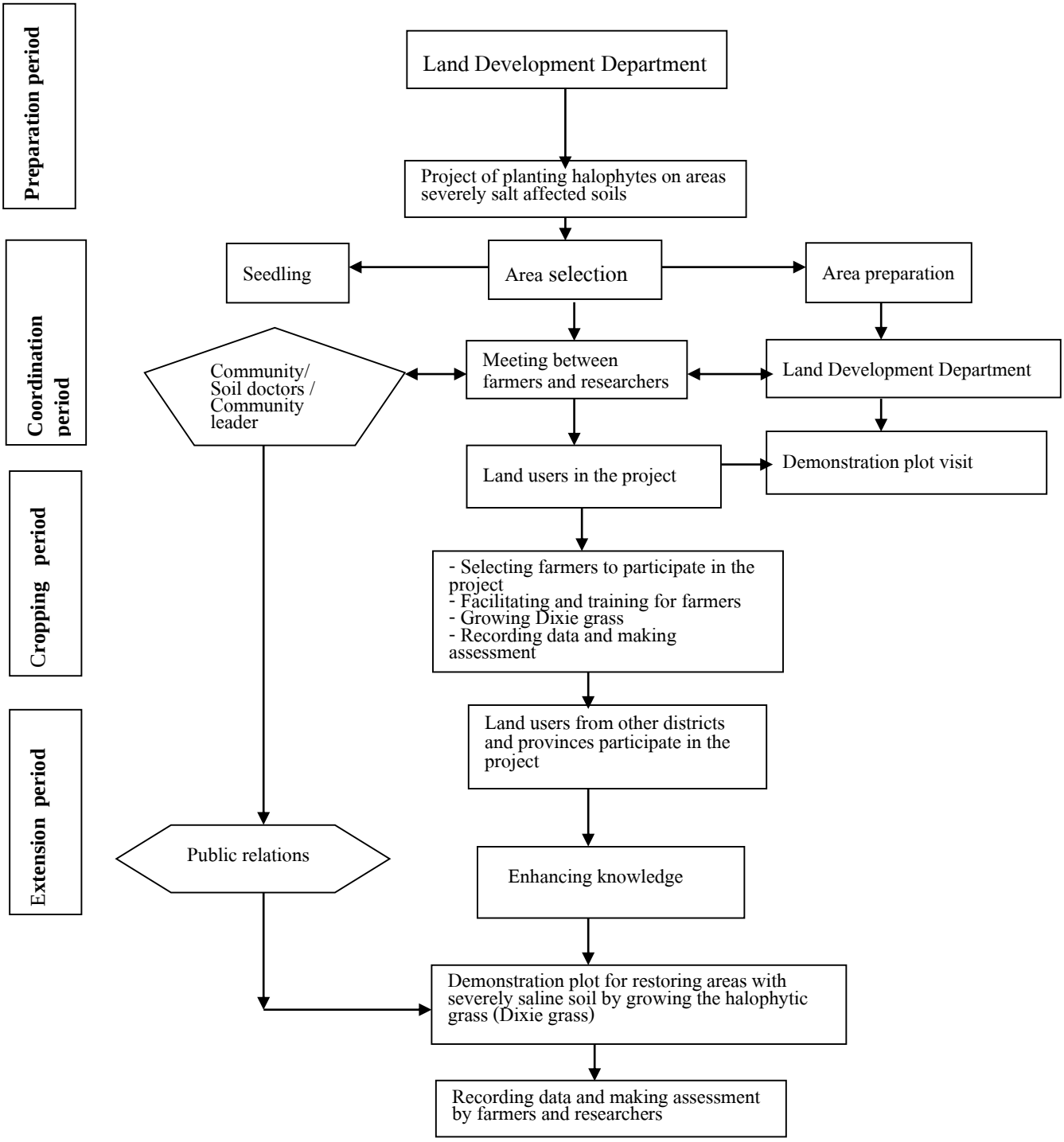

Fig. 1 The process with participation for 4 steps of developing the technology among organizations, volunteers, community in soil amendment, farmers and experts of sustainable land management and researchers

4. Technical support, building capabilities and knowledge management

The approach of extending results of planting the halophytic grass (Dixie grass) to control areas with severely saline soil: 1) Transferring the knowledge of restoring severely saline soil based on planting Dixie grass; 2) Building awareness of reducing saline soil distribution in the community area of one's own; 3) Participants of the restoring project must take the study trip to see the achieved sample plot; and 4) Officers give advice, monitor and assess results of the operation.

4.1. Procedures of the operation are as follows:

4.1.1 Prepare the budget of restoring severely saline soil under the topic "Preventing and restoring the land affected by salt with available technology and increasing incomes to farmers" using the technology of halophytes cultivation (Dixie grass) for restoring severely saline soil based on the reference from the group of researching and developing saline soil management conducting the research on the topic “Halophytes plantation and flow path along the landscape in Northeast Thailand” together with Dr. J.L. Gallagher from Delaware, University.

4.1.2 Recruitment announcement for farmers who possess areas with severely saline soil and intend to participate in the project

4.1.3 Officers explain details, steps of the operation and consequences which farmers will obtain

4.1.4 Officers transfer knowledge about Dixie grass cultivation for restoring areas with severely saline soil and visit the achieved place whereby farmers who are the owner of the plot and soil doctors pass on experiences, keys to success and open up a stage for exchanging opinions with one another. Experts of improving saline soil give advice and answer academic questions so that farmers will have more knowledge and understanding.

4.1.5 Officers must monitor and assess the project: Making a survey of the survival rate, monitoring growth of plants in the area with severely saline soil, supporting knowledge and solutions

4.2 Support in terms of finance and materials & equipment

Land Development Department has supported farmers who participate in the project for restoring severely saline soil by planting the halophytic grass (Dixie grass) in areas with severely saline soil of Northeastern Thailand: Support for finance / materials & equipment; Production factors not less than 2,000 US dollars are Dixie grass seedlings, expenses for planting preparation such as fertilizers, planting labor.

5. Conclusion

5.1 Impact of the operation approach:

5.1.1 Farmers who participate in the project obtain food security and family incomes.

5.1.2 Establishing the learning center for farmers to be a source of transferring technology and data of restoring severely saline soil based on growing the halophytic grass influences farmers' decision-making, acceptance and implementation in their own areas, which increases a little bit.

5.1.3 Most farmers tend to use the technology to maintain the environment of the area to become better and propagate this technology to farmers in nearby areas further.

5.1.4 Farmers participating in the project adjust the knowledge and apply the method of managing saline soil to have a form which is suitable with their own areas.

5.1.5 The area participated in the project has more diversities of plants and animals. As a result, farmers can grow rice and use the grass as fodder for cows.

5.2 Main motivation of land users to implement sustainable land management

5.2.1 Farmers have increased agricultural products after implementing the technology of planting Dixie grass for restoring saline soil.

5.2.2 Farmers can see problems of soil degradation occurring to areas and losses of plant production and incomes form the area.

5.2.3 Regarding areas with saline soil of farmers participating in the project, farmers have knowledge and positive attitudes towards growing Dixie grass more and more. They can utilize

the land sustainable. For example, there is better environment. Rice can be grown in the area. There is fodder for livestock. Also, farmers have increasing incomes.

5.3 Strength

Volunteer soil doctors, local administration organizations and local leaders are coordinators in the area. This makes farmers able to access the market and the source of Dixie grass seedlings easily. Growing Dixie grass in areas with saline soil and propagating Dixie grass seedlings can be done with no expenses.

The attitude of the complier: The techniques are supported and built to help improve the environment on severely saline soil in Northeastern Thailand. The techniques in growing Dixie grass are prepared by Land Development Department and community volunteers in improving soil and demonstration plots achieved as sample plots in the area.

5.4 Weakness/ disadvantages/risks

Public relations of the project are not made sufficiently especially for areas with severely saline soil. Suggestions are: Land Development Department must coordinate closely with local administration organizations to promote the project.

The attitude of the complier: Some farmers do not believe that Dixie grass can withstand salinity and reduce soil salinity after cultivation. Suggestions are: Officers should build knowledge from successful farmers by visiting farmers in the area often under the project "Growing Dixie grass to restore areas with severely saline soil"

Activities Pictures


Fig. 1-2 Experts, researchers and owners of the area discuss together regarding utilizing Dixie grass in areas with severely saline soil


Fig. 4-5 Areas with severely saline soil before being restored with Dixie grass