

”Agricultural Land and Production Environment Improvement in Salt Affected Area”

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**Summary**

Total area of saline soil on the earth covers approximately 900 million ha. The area is known for its low productivity if utilized for agriculture. Ever increasing world population demands more food production while the arable land is limited. Therefore the saline soil should get attention to satisfy the food supply for the increasing world population.

KhonKaen locats in the Northeast of Thailand. Saline soil in the region is expanding as a consequence of deforestation and expansion of farmland. The saline soil in the area need to be improved to ensure the sustainable development of the region.

Investigation on plant species and ecosystem of the area was conducted to clarify a degree of diversity of this study area. The results revealed the poor standings of some shrub and herb which has salt and drought tolerance, but the high salt accumulation area was barren. Initially, the study area had a very poor vegetation on poor quality of soil. But as time goes by, plant population and number of species are increased, then plant community developed. The change observed here was; 1.salt tolerant plant on saline soil, 2.soil salinity reduced gradually, 3.less salt tolerant plant grow.

To confirm the successive change of the plant community as well as soil environment, pot test was conducted. The results shows the soil environment (salinity) change caused by plants is effective but still it is slow process. Some engineering measure is needed to overcome the extended time needed for this process.

A Polder system was constructed in the study area for soil improvement experiment. The polder is surrounded by bank to avoid the inflow of flood water which is saline in this area. The “capillary cut off zone” was tested for its depth and material in the polder. The expected effects are; 1.Keep saline water in root zone from moving up toward the surface, 2. Leaching effects during rainy season and irrigation.

During dry season, the cut off zone below the root zone effectively prevent the capillary rise of saline groundwater. During rainy season, salt was leached down only at the gravel cut off installed plot. This might due to the boundary effect widely known at he fine material overlying coaser material. The results suggest the saline soil improvement by installing gravel cut off zone underneath the rood zone. This method can leach salt during heavy rain season while capillary rise effectively prevented during dry season.