

Study on Cultivation Way with Desalination of the Brackish Water

Koji TAMAKI*, Makoto ANASE**, Fusakazu AI*, Shuichi SUGI***,
Shotaro KAWAKAMI*, Junya TATSUNO* and Tsuneo OISHI****

*Faculty of Regional Environment Science, Tokyo University of Agriculture

**Nodai Research Institute, Tokyo University of Agriculture

***Faculty of Agriculture, Natural Resource and Environment, Naresuan University, Thailand

****Graduate school, Tokyo University of Agriculture

Summary

Because of deforestation, ecosystem has been devastated in Northeast of Thailand. More than 1.5million ha of area is now affected by salt accumulation. In such area, water in ponds and groundwater are also including much salt, and there are many difficulties to use such water for agriculture.

In this study, methods for effective utilization of the water in ponds and groundwater on saline land such as Northeast of Thailand were discussed.

For desalination of the brackish water, a lot of ways as solar distillation methods were introduced. In this research, a new type of solar still was proposed. The system is separated into two parts, one is evaporator and another is condenser, which forced to make vapor air condensed directly into the soil. This forced condensing process is called as the "Vapor irrigation".

Some experiments of evaporation and condensation were carried out to evaluate the performance of the new type of solar still. In forced condensing process, it is important to increase the difference of temperature between water vapor and condensing surface. For that purpose, it might be effective to decrease heat losses of devices, to use heat collectors for increasing temperature of water vapor and to use the cooling devices like peltier element for decreasing temperature of condensing surface.

With combining with PV drainage pump for groundwater control, this study will be useful for recovering vegetation on the saline land as Northeast of Thailand.