

Environmental Study to Improve Salt Affected Land for Use as Agricultural land with Polder System

Michihiro Hara(Iwate University)
Tomoharu Ishida(Utsunomiya University)
Hiroshi Shono(Iwate University)
Shuichi Sugi(Iwate University)

Summary

A Polder system with bank was construct in the study area, then the polder was utilized for soil improvement experiment. the purpose of the constructed bank the polder from flooding and inflow salted-water. Rides with various cutt-off zone materials(materials tested were gravel/rice husks) were tested for intensive soil improvement.

The effects expected by constructing cutt-off zone; 1)Keep salt-dissolved capillary water in root zone from moving up ward to the soil surface, 2)Salt leaching at root zone during rain and irrigation period.

Salt-dissolved capillary water was observed during dry season in gravel and rice husk cutt-off plots. During dry season, capillary water of control plot moved upward and subsequently salt concentration was increased. From the results, establishing cutt-off-zone underneath the root zone stopped capillary raise of saline water, and prevented salt accumulation at upper layer.

During rain season, salt was leached from the root zone only at gravel cutt-off installed plots and only when the raining season at heavy rain. Attributed to the capillary barrier effect which is in effect at the boundary between fine-material overlaying coaster materials. The barrier prevent water from moving downward.

The research results showed the saline soil improvement by establishing a gravel cutt-off-zone right underneath the root zone was effective to avoid salt accumulation. This method can be leach salts during heavy raining years, at the some time capillary water can be prevented from rising(during dry season). Since salt leaching is not effective during dry years, capillary rise of saline water is prevented. If the soil can be irrigated, salt accumulation should be anxious movement of capillary water is prevented so that salt concentration at root zone will be reduced.