

## Characteristics of the soil loss and soil salinity of upland soil in saemangeum reclaimed land in western South Korea

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### Abstract

The objective of this study is to estimate quantitatively soil salinity and soil loss at upland soils in agriculture land region in Saemangeum reclaimed land on the south Korea coasts. Soil loss and soil salinity are the most critical problem at reclaimed tidal saline soil in Korea. The several thematic maps of research area such as land cover map, topographic and soil maps, together with tabular precipitation data used for soil erosion and soil salinity calculation. Meteorological data were measured directly as air temperature, wind speed, solar radiation, and precipitation. The experiment was conducted 2% sloped lysimeter (5.0 m x 20.0 m) with 14 treatments and it were separated by low salinity division (LSD) and high salinity division (HSD) install. The cation content in ground water increased during time course, but in the case of land surface water the content was variable, and  $K^+$  was lower than that of  $Na^+$  and  $Mg^{2+}$ . At the LSD under rainproof condition, the salinity was directly proportional to soil water content, but at the HSD the tendency was no reversed. In condition of rainproof, the amount of soil salinity was higher at the HSD than at the LSD. Positive correlation was obtained between the soil water content and available phosphorous content at the rainfall division, but there was no significance at the surface soil of the rainproof division. Sodium adsorption ratio and anion contents in soil were repressed in the order of vinyl-mulching > non-mulching > bare field. According to the result of analyzing soil loss, soil loss occurred in a vinyl-mulching, a non-mulching and a bare field in size order, and also approximately 11.2 ton/ha soil loss happened on the reclaimed land area. The average soil loss amount by the unit area takes place in a non-mulching and bare field a lot. Our results indicate that soluble salt control and soil erosion are critical at reclaimed tidal saline soil and the results can provide some useful information for deciding management plans to reduce soil loss and salt damage for stable crop production and diverse utilization or cultivation could be one of the management options to alleviate salt damage at reclaimed tidal saline soil in Korea.

Keywords: Soil loss, soil salinity, upland soil, reclaimed land, Western Korea

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