Measurement of Soil Salinization using Electromagnetic Induction Technique

- A case study of the Hetao Irrigation District, Inner Mongolia, China -

Takashi Kume *, Takanori Nagano **,
Tsugihiro Watanabe, **Toru Mitsuno*
*Graduate school of agriculture, Kyoto University
**Research Institute for Humanity and Nature（RIHN）

To manage crop field soil salinity in arid zone, it is very important to assess the degree of soil salinization and to control the distribution of irrigation water. The electrical conductivity is one of the most useful salinity indices. ECa (apparent electrical conductivity) can be measured very quickly using electromagnetic induction technique (EM technique). Rhoades et al. (1976) stated that ECa has high correlation between soil salinity under constraint condition. The aim of this study was to analyze horizontal soil salinity distribution using EM technique and to analyze correlation between soil salinity and crop height. For this purpose, we set up two investigation sites (site A, B) and measurements were carried out. EC of the soil water extract (EC1:5) and ECa measured by EM technique were compared at site A. Meanwhile, ECa and crop (sunflower) height were measured at over 1600 points at site B, and ECa contour map and crop vegetation map were made and compared.

The main results were as follows;

(1) High correlation between apparent electrical conductivity (ECa) and soil salinity (EC1: 5) was obtained.

(2) ECa values measured by EM technique were highly correlated to crop (sunflower) growth.