

The relation of Soil water repellency appearance characteristics and soil physical-chemical properties in the domestic agricultural land and New Zealand pasture land

*Hisanobu Kuroki¹

1. Graduate School of Science and Engineering and the International Institute for Resilient Society, Saitama University

Soil water repellency (SWR) is the natural phenomenon which has been commonly related to organic compounds and aggregation in soils. Soil Water Repellency in the field will cause non-uniform infiltration and surface run-off, soil erosion. Especially, agricultural land under organic management may be particularly vulnerable to SWR as a result of frequent organic fertilizer applications. The objectives of this study are i) to investigate the spatial distribution of SWR at the surface, ii) to investigate the difference of SWR at the surface of a soil in the field and laboratory, and iii) to identify the relationship between the SWR and soil physical chemical parameters. Two sites were selected; greenhouse vegetable farm at Mizuho-farm, Miki-city, Hyogo prefecture in Japan and pasture land at Tihoi-farm, Waikato in New Zealand. Field measurement and soil sampling were carried out at Mizuho-farm in December 2013 and October 2014, at Tihoi-farm in February 2014 (summer) and December 2014 (spring). At the result, SOC and C/N are not related to field SWR appearance compare to field water content. And comparison of laboratory SWR and field SWR shows that higher clay content will make higher field SWR by surface roughness.

Keywords: Soil water repellency, Elemental analysis