

ABSTRACT

Mapping the content of soil water is substantial process in various fields such as, agriculture, ecology, and civil engineering. A method for mapping the soil water content for large area is needed, Gravimetry are usually used as the method to find the soil water content information on large area, but this method work by collecting sample, so it take many time and cost expensive. Another method to determine the soil water content are Ground Penetrating Radar (GPR). GPR is a method for detecting objects that are buried under the soil surface by using electromagnetic wave. Accordingly, to develop a method that needed for mapping the soil water content at large area, GPR system is potentially implemented. The post-processing for GPR data are need to designed to obtain the soil water content information.

This thesis propose a post-processing on GPR data to obtain soil water content information. Post-processing method that proposed in this thesis is based on Least Square extraction model and will be developed using MATLAB. The experiment are conducted on laboratory experiment using VNA to investigate the proposed method.

By the post-processing method that proposed, finding the soil water content information to mapping the soil water content on large area will be time and cost and efficient and the accuracy of the result are in range of 60-87 percent that are an acceptable value.

Keywords: *soil water content, Ground Penetrating Radar (GPR), post-processing, MATLAB.*