

## **Delineation of Soil Physical Properties Using Electrical Conductivity, Case Study: Volcanic Soil Simulation Model**

**Authors :** Twin Aji Kusumagiani, Eleonora Agustine, Dini Fitriani

**Abstract :** The value changes of soil physical properties in the agricultural area are giving impacts on soil fertility. This can be caused by excessive usage of inorganic fertilizers and imbalances on organic fertilization. Soil physical parameters that can be measured include soil electrical conductivity, water content volume, soil porosity, dielectric permittivity, etc. This study used the electrical conductivity and volume water content as the measured physical parameters. The study was conducted on volcanic soil obtained from agricultural land conditioned with NPK fertilizer and salt in a certain amount. The dimension of the conditioned soil being used is 1 x 1 x 0.5 meters. By using this method, we can delineate the soil electrical conductivity value of land due to changes in the provision of inorganic NPK fertilizer and the salinity in the soil. Zone with the additional 1 kg of salt has the dimension of 60 cm in width, 20 cm in depth and 1 cm in thickness while zone with the additional of 10 kg NPK fertilizer has the dimensions of 70 cm in width, 20 cm in depth and 3 cm in thickness. This salt addition resulted in EC values changes from the original condition. Changes of the EC value tend to occur at a depth of 20 to 40 cm on the line 1B at 9:45 dS/cm and line 1C of 9.35 dS/cm and tend to have the direction to the Northeast.

**Keywords :** EC, electrical conductivity, VWC, volume water content, NPK fertilizer, salt, volcanic soil

**Conference Title :** ICECE 2017 : International Conference on Environmental and Chemical Engineering

**Conference Location :** Kuala Lumpur, Malaysia

**Conference Dates :** February 12-13, 2017