

ON-THE-GO VERTICAL SOUNDING OF AGRICULTURAL FIELDS USING EMI SENSORS

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Abstract

Spatial variability of topsoil depth is of interest to many agricultural practitioners since it relates to the ability of soil profile to accumulate water and nutrients. Conventional on-the-go mapping of apparent soil electrical conductivity provides valuable information related to the spatial variability of soils, but does not always allow detecting differences that occur with depth. On the other hand, application of vertical cone penetrometers, capable of measuring electrical conductivity at any specific depth, does not allow economically feasible density of measurements. Therefore, this project examines the use of an electro-magnetic induction (EMI) sensors designed to elevate vertically to sense changes of electrical conductivity at multiple soil depths. This paper presents preliminary vertical sounding data and a description of the basic analytical instrument being developed to predict the associated soil electrical conductivity profile.