

DDE Supplement / Attachment

DDIdentifier₍₁₀₎	DDName
655	Electrical Apperent Soil Conductivity

Version: 1.0

Apparent soil electrical conductivity (ECa) has been used at field scales to determine a variety of various soil properties. While being influenced by a combination of physico-chemical properties including soluble salts, clay content and mineralogy, soil water content, bulk density, organic matter, and soil temperature; consequently, measurements of ECa have been used at field scales to map the spatial variation of several edaphic properties: soil salinity, clay content or depth to clay-rich layers, soil water content, the depth of flood deposited sands, and organic matter. In addition, ECa has been used at field scales to determine a variety of anthropogenic properties: leaching fraction, irrigation and drainage patterns, and compaction patterns due to farm machinery.

Apparent soil electrical conductivity is a quick, reliable, easy-to-take soil measurement that often, but not always, relates to crop yield. For these reasons, the measurement of ECa is among the most frequently used tools in precision agriculture research for the spatio-temporal characterization of soil management zones that influence crop yield.

A comprehensive and instructive discussion of the theory and principles of the ECa measurement is presented by Hendrickx et al. (2002).

Hendrickx, J.M.H., Das, B., Corwin, D.L., Wraith, J.M., Kachanoski, R.G., 2002. Indirect measurement of solute concentration. In: Dane, J.H., Topp, G.C. (Eds.), *Methods of Soil Analysis, Part 4 – Physical Methods*. Soil Sci. Soc. Am. Book Ser. 5. Soil Science Society of America, Madison, WI, USA, pp. 1274– 1306.