



## **Mapping Soil Salinity with ECa-Directed Soil Sampling: History, Protocols, Guidelines, Applications, and Future Research Trends**

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Soil salinity is a spatially complex and dynamic property of soil that influences crop yields when the threshold salinity level is exceeded. Mapping soil salinity is necessary for soil classification, reclamation, crop selection, and site-specific irrigation management of salt-affected soils in the arid and semi-arid agricultural regions of the world. Because of its spatial and temporal heterogeneity soil salinity is difficult to map and monitor at field scales. There are various methods for characterizing soil salinity variability, but none of these approaches has been as extensively investigated and is as reliable and cost effective as apparent soil electrical conductivity (ECa) directed soil sampling. Geospatial measurements of ECa are well-suited for characterizing soil salinity spatial distribution because they are reliable, quick, and easy to take with GPS-based mobilized ECa measurement equipment. However, ECa is influenced by a variety of soil properties, which makes the measurement of soil salinity at field scale problematic. It is the goal of this presentation to provide an overview of the field-scale characterization of soil salinity distribution using ECa-directed soil sampling. A historical perspective, protocols and guidelines, strengths and limitations, applications, and future trends are presented for characterizing spatial and temporal variation in soil salinity using ECa-directed soil sampling. Land resource managers, farmers, extension specialists, soil classification specialists, and Natural Resource Conservation Service field staff are the beneficiaries of field-scale maps of soil salinity.