

Review Article

Electro magnetic induction sensor for measuring soil salinity

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Summary

The technology described in this paper for measuring soil salinity has been extensively and successfully field-tested. It is concluded to be sound, reliable, accurate and applicable to a wide variety of useful applications. It is based on proven theory of soil electrical conductivity. The advocated instrumental methodology is practical, cost effective and well developed for essentially all general applications. It is cheaper, faster and more informative than traditional methods of salinity measurement based on soil sampling and laboratory analysis. Software is available to facilitate its use for mapping and monitoring uses. Its usefulness has been demonstrated for diagnosing soil salinity, inventorying soil salinity, monitoring soil salinity, evaluating the adequacy and appropriateness of irrigation and drainage systems and management practices, determining the aerial sources of excessive leaching, drainage and salt-loading in crop lands, establishing the spatial soil information needed to develop prescription farming plans to manage fields with spatially-variable salinity conditions and for scheduling and controlling irrigations under saline conditions. It offers the potential to identify the inherent causes of salinization in fields. The salinity assessment approach advocated in this study offers a more suitable basis for evaluating, managing and controlling soil salinity than do the leaching requirement and salt balance concepts/measurements as traditionally applied. National programs need to be implemented to mitigate the substantial problems of secondary salinization that threaten the sustainability of irrigation in many places in the world. The presented salinity assessment technology offers substantial practical potential to monitor, manage and control soil and water salinity, as will be needed to sustain irrigated agriculture and to meet the world's food needs in the coming decades.

Key words : Soil salinity, Soil electrical conductivity, Electro magnetic induction sensor, Precision farming

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