

MIA ENVIROWISE: Summary of EM Surveys _ information sheet

An Overview of MIA EnviroWise

MIA EnviroWise is the major natural resource management plan for the Murrumbidgee Irrigation Area (MIA). The main objective of MIA EnviroWise is to maintain and enhance the sustainability and profitability of the MIA and districts.

MIA EnviroWise benefits our community by ensuring our current standard of living and by protecting the natural and financial resources of the area.

MIA EnviroWise contributes to the sustainability of farming and rural industries, improved biodiversity and the health of our waterways.

EM Surveys

Electromagnetic induction (EM) instruments are being used increasingly to assist soil surveys and precision agriculture.

EM instruments measure the flow of electrical current through the soil called the soil's apparent electrical conductivity (ECa) measured in mS/m.

All instruments, which include the EM31, EM38, EM39 and EM34 operate the same way, the only difference being the spacing between transmission and receiver coils. The wider apart the coils the deeper the instrument reads into the soil.

EM Instruments

EM38	Effective depth of up to 2 metres. Routinely used to confirm soil salinity Useful diagnosis tool for identifying salinity stress to trees, crops and pastures.
EM31	Measures soil conductivity to a depth of 6 metres. Most widely used for soil texture surveys and for estimating groundwater recharge commonly used to assess rice suitability.
EM34	Can vary coil spacing to measure 8-60 metres deep. Most widely used to locate shallow aquifers and deeper storages of salt in the landscape, regional mapping.
EM39	Inserted into bore holes. No application for farmers.

EM surveys provide an integrated measure of the soil profile and identify variability within the field. Soil sampling and analysis must be undertaken at different ECa levels in the field to determine actual texture, salinity and moisture of the soil.

Soil Sampling

EM surveys require soil profile sampling. Soil sample identify actual levels of salt, clay and moisture. In a rice field with high water use, the leaky areas are normally at the lower ECa values. A pententiled map is created and drilling sites are selected covering all of the features in the field.

Interpreting Data

In terms of soil suitable for rice growing, non-suitable soils have low ECa values. Generally, low ECa indicates low level of clay, more leaching therefore less salt and sandy soil holds less moisture than clay soils. Primary soil properties that directly affect EM measurements are soil water salinity, clay content, water content and soil temperature.

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For further information contact an MIA EnviroWise Implementation Officer on 6962 0200.



Murrumbidgee
CATCHMENT MANAGEMENT AUTHORITY



Australian Government



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