



South West Victoria SoilSmart Series: Soil salinity monitoring

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What is Soil Salinity?

Soil salinity is the accumulation of high salt concentrations in the root zone, which has been introduced by rising water tables that have collected salts from the weathered material below the soil. Salt in the soil adversely affects plant growth. High salt levels are toxic to plants as they affect the roots' ability to take up water.

Equipment needed for Monitoring

- Salinity meter, probably an EC stick
- Distilled water or freshly collected rainwater.
- Weight scales
- Water tight plastic or glass container

Soil Sample Collection

Divide your monitoring areas into different soil types (according to texture) and also into different sections of

slope. If some areas are bare or have poor groundcover sample these soils separately.

Take your soil samples in late summer to early autumn (Feb-March) which is the period of highest salt concentrations. Try to take them at the same time each year and not within three weeks after rain.

Collect samples from the 0-10 cm and 15-30 cm depths.

Soil Preparation

Mix the soil samples and weigh out 10gm then mix with 50 ml of water. Remember that the quantity of soil is not important, rather its ratio with water. So if you have no scale, 5 equal water quantities to 1 equal soil quantity will be an approximate way of doing this.

Taking the Soil EC

Measure the salt content of the solution using the salinity meter, which should be calibrated by testing standard solutions. Use the conversion table to work out soil EC.

Interpreting the Soil EC Reading

Table: Approximate Conversion table for the different salinity measurements in soil.

Totalled Dissolved Salts (TDS) (ppm or mg/l or µg/ml) 1:5 soil:water extract	Electrical Conductivity (EC) 1:5 soil:water extract			% Soluble Salt in the soil	Effect of soil salinity on plant growth
	(mS/cm)	(µS/cm)	(mS/m) (common use)		
0-120	0.0 - 0.2	0 - 200	0 - 20	0 - 0.05	Salinity effects are negligible.
120-250	0.2 - 0.4	200 - 400	20 - 40	0.05 - 0.10	Yields of sensitive crops restricted (eg. sub. Clover)
250-500	0.4 - 0.8	400 - 800	40 - 80	0.10 - 0.25	Yields of many crops restricted (eg. lupins)
500-1000	0.8 - 1.6	800 - 1,600	80 - 160	0.25 - 0.50	Only a few salt tolerant plants yield satisfactorily.
>1000	> 1.6	> 1,600	> 160	> 0.50	Death of most plants (except saltbush)

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