Soil Salinity Testing

Why Salinity Sample?
Salinity sampling can save you money by helping you to select the crop or pasture with the appropriate salt-tolerance, thereby avoiding expensive mistakes.

It is recommended that a composite sample for the 0-10cm depth is tested. A subsoil sample in the 20-30cm depth range can also be useful, particularly if you’ve had a recent shower of rain, which can significantly reduce the salinity level in the topsoil.

When should I sample?
Late summer is the best time to salinity sample as this is the time when soil salinity peaks. Salinity varies with the year and in particular through the seasons, however the summer peak period is still the most consistently reliable figure to be used as a measure of salinity.

Can I use the salinity figures they provide in my nutrient soil analyses?
In areas other than salt scalds, soil salinity sampling can be carried out as part of your normal soil nutrient sampling (0-10cm depth), as most laboratories include a measure of electrical conductivity (EC) in their standard soil test package. Note however that these figures need to be converted for use (refer overleaf – Interpretation of Soil Salinity Results). To be representative the sampling also needs to be done in mid-summer to mid-Autumn (before opening rains) and should not be taken across more than one distinct ‘salinity zone’. Different ‘zones’ can be identified by the different types of vegetation that dominate.

What if I just want salinity figures?
If you want to test for soil salinity only, the following method for sample collection should be followed.

Firstly define the area to be sampled. It is very important to sample areas that look different separately. For example, an area covered with sea barley grass is likely to have a different salinity level that is bare or covered in samphire. The presence of reeds or rushes may also indicate a different salinity zone in that specific area.

Then, within the defined area, take samples at 0-10cm (removing the top half centimetre if a salt crust has formed) at 5 to 10 different sites with an auger and mix the samples well. A handful of this combined sample is then taken for testing.

For a sub-soil sample, simply collect an extra sample at each site in a different bucket. This can then be mixed well before a handful of combined soil is taken to be tested.

Where can I send my samples for testing?
PIRSA in the South East is offering to test samples for pH and salinity - @$5 per sample and salinity only @ $4 per sample.
Interpreting soil salinity results.

Soil salinity is usually tested using a 1:5 water test as this is quick and cheap to complete. Results from this test are usually expressed in dS/m, which is equivalent to mS/cm.

Results from the 1:5 water test need to be converted to Ece to be compared to a crop tolerance table. The figures for this table are based on results from the ‘saturated paste test’. An appropriate salinity crop tolerance table can be obtained from Primary Industries Offices.

To convert your figures to Ece multiply your EC figure by the appropriate factor below for the respective soil texture

- Sand or loamy sand X 14
- Sandy Loam to clay loam X 9.5
- Clay X 6.5

Note; the 1:5 water test is not as accurate as the saturation paste method, particularly at higher values.

Soil Salinity Tolerance of some crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>Expected yield reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Barley</td>
<td>8.0</td>
</tr>
<tr>
<td>Wheat</td>
<td>6.0</td>
</tr>
<tr>
<td>Field-beans</td>
<td>1.0</td>
</tr>
<tr>
<td>Lucerne</td>
<td>2.0</td>
</tr>
<tr>
<td>Perennial Ryegrass</td>
<td>5.6</td>
</tr>
<tr>
<td>Tall Wheat Grass</td>
<td>7.5</td>
</tr>
<tr>
<td>Strawberry</td>
<td>1.5</td>
</tr>
</tbody>
</table>


Further Details for those in the Upper South East: Contact Tracey Strugnell at the Upper South East Catchment Centre on 8755 3166

The content of this factsheet is accurate to the best of our knowledge at last update on 31/1/2000 and is designed to be used in conjunction with local advice. Assistance in interpretation of salinity results can be obtained from local agronomists in your area.