Healthy grassland soils

How to assess soil structure

Step one: Surface assessment
Look at the quality of the sward to identify potentially damaged areas that require further assessment. Where the sward is moderate or poor, this may indicate that further investigation of the soil quality is required.

- **Good**
  - Sward intact
  - No poaching
  - Few wheelings

- **Moderate**
  - Surface poached
  - Wheelings in places
  - More weed species

- **Poor**
  - Surface capping
  - Soil exposed
  - Severe poaching
  - Poor sward quality

Step two: Soil extraction
- Dig out one spade-sized block of soil (depth approx. 30 cm). Cut down on three sides and then lever the block out, leaving one side undisturbed
- Lay the soil block on a plastic sheet or tray

Tip: When starting out, it is useful to dig in an area where you know there may be a problem (e.g. a gateway) and get familiar with signs of soil structure damage.

Remember: Sample when the topsoil is moist – if the soil is too dry or too wet, it is difficult to distinguish signs of poor soil structure.

Step three: Soil assessment
Gently open the soil block like a book to break it up.

- If the structure is uniform – assess the block as a whole
- If there are two or more horizontal layers of differing structure, identify the layer with the poorest structure (the limiting layer)
- Carry out the rest of the assessment on this limiting layer

Step four: Soil scoring
Break up the soil with your hands into smaller structural units or aggregates (soil clumps).

- Assign a score by matching what you see to the descriptions and photos overleaf
- A score of 1 or 2 is **Good**; a score of 3 is **Moderate** and 4 or 5 is **Poor** and requires management action
- Record the depth of the limiting layer to assess management options

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<table>
<thead>
<tr>
<th>Score 1 – Crumbly (aggregates readily crumble with fingers)</th>
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<tbody>
<tr>
<td>Identification of structural problem e.g. limiting layer</td>
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<tr>
<td>----------------------------------------------------------</td>
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<tr>
<td>Small (&lt;6 mm), rounded</td>
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<tr>
<th>Score 2 – Intact (aggregates easily break apart)</th>
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<tr>
<td>Identification of structural problem e.g. limiting layer</td>
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<td>----------------------------------------------------------</td>
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<tr>
<td>Rounded (10 mm)</td>
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<tr>
<th>Score 3 – Firm (most aggregates break down)</th>
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<tr>
<td>Identification of structural problem e.g. limiting layer</td>
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<tr>
<td>----------------------------------------------------------</td>
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<tr>
<td>Rounded (10 mm), but some are angular</td>
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<tr>
<th>Score 4 – Compact (effort needed to break down aggregates)</th>
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<tr>
<td>Identification of structural problem e.g. limiting layer</td>
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<tr>
<td>----------------------------------------------------------</td>
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<tr>
<td>Larger (&gt;5 cm), angular</td>
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<tr>
<th>Score 5 – Very compact (aggregates are compact, difficult to pull apart and platy)</th>
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<tr>
<td>Identification of structural problem e.g. limiting layer</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
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<tr>
<td>Large initially (&gt;10 cm), angular</td>
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Based on the VESS method of soil structure assessment [www.sruc.ac.uk/vess](http://www.sruc.ac.uk/vess)

See the [Healthy grassland soils pocketbook](http://ahdb.org.uk) for more information, available at [ahdb.org.uk](http://ahdb.org.uk)