

Soil Protection Review and managing waterlogged soils

Harvesting under the wet conditions in 2012

Good soil structure is essential in optimising crop yields. Soil damage may have occurred due to harvesting in wet conditions. Careful inspection of the soil structure needs to be undertaken to ensure the correct remedial action take place.

Soil damage and Cross Compliance

In order to comply with Cross Compliance, it is important that any mechanical field operations, including harvesting, carried out on waterlogged soil are recorded in the Soil Protection Review 2010 under 'Access to waterlogged land' (page 44-46). Appropriate action to remediate damage caused by accessing waterlogged soil must be done as soon as possible within 12 months of the first month of access to the waterlogged field. This action is in addition to any other actions identified in the Farm Soil Plan.

Identifying soil damage and appropriate remedial action

Soils structure should be assessed as soon as possible, ideally by the end of February when the damage is more visible. An action plan can then be put in place which identifies fields which have the most severe damage, which can then be prioritised for remedial action when the soil is dry enough for repair. It is unlikely that much soil damage can be repaired in the spring as there needs to be a sufficient dry period to dry the soil out at depth.

The topsoil and the subsoil should be assessed separately by digging a hole to the appropriate depths – normally 25cm for the topsoil and 35cm for the subsoil – and looking carefully at both types of structure.

If there is no compaction present, the topsoil will present a crumbly face throughout the topsoil profile and, in this condition, every part of the soil profile can be accessed by the plant roots. If the topsoil is suffering from compaction it can inhibit root growth and nutrient uptake causing nutrient deficiency leading to a loss of yield. Compacted soils have an obvious lack of structure.

The subsoil should provide a structure which is able to support the topsoil while having enough fissures within it to allow for good drainage of the soil. It should also allow the root systems to travel down these cracks looking for soil moisture when the plant has a high moisture requirement in the spring and summer. Therefore, the subsoil naturally wants to look 'angular' and 'blocky' but with vertical cracks within it to allow for drainage to occur.

The worst damage is normally shown within 7cm of the bottom of the wheeling. Therefore, depending on the depth of the rut that has been formed, the depth of remedial action can be determined.

Remedying topsoil damage can be relatively easy once the depth of the compaction has been assessed. An implement running 2.5cm below the depth of compaction should be able to alleviate the problem.

Soil drainage

Where damage has been more severe and compaction to the subsoil has occurred (which will show as a rutted field with standing water), then it is likely to have impeded drainage and the soil will need to be drained before any remedial action can be considered. You may wish to consider mole ploughing in spring if the soil type is suitable. This will need to be followed by subsoiling in the autumn to remove the compacted layer.

Waterlogged soil does severely affect the life within the soil and encouraging drainage as quickly as possible should be the aim. As a temporary measure, consideration should be given to mole ploughing just below or in the compacted layer with the mole being taken right into the ditch to allow drainage as rapidly as possible. Shallow mole ploughing will not be as successful as moling at normal depths and therefore should be only considered where there are large amounts of standing water.

When it has dried sufficiently and where it is possible, the field should then be drilled as soon as it is dry enough to allow the growing crop to help dry out the soil.

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