

Soil Alert 6

capping silts

Soils susceptible to capping and surface sealing.

Soils with non-calcareous, light to medium loamy and silty topsoils containing relatively large amounts of silt and fine sand sized material form some of the best agricultural land in the country but, if their surfaces remain bare and exposed to significant rainfall, are susceptible to superficial structural collapse. This susceptibility is particularly acute where topsoil organic carbon contents are less than about 1.5% (about 2.6% organic matter content), as illustrated in the figure below showing the relationship between organic carbon content and a measure of structural stability termed the dispersion ratio. The higher the dispersion ratio percentage, the more structurally unstable the soil.

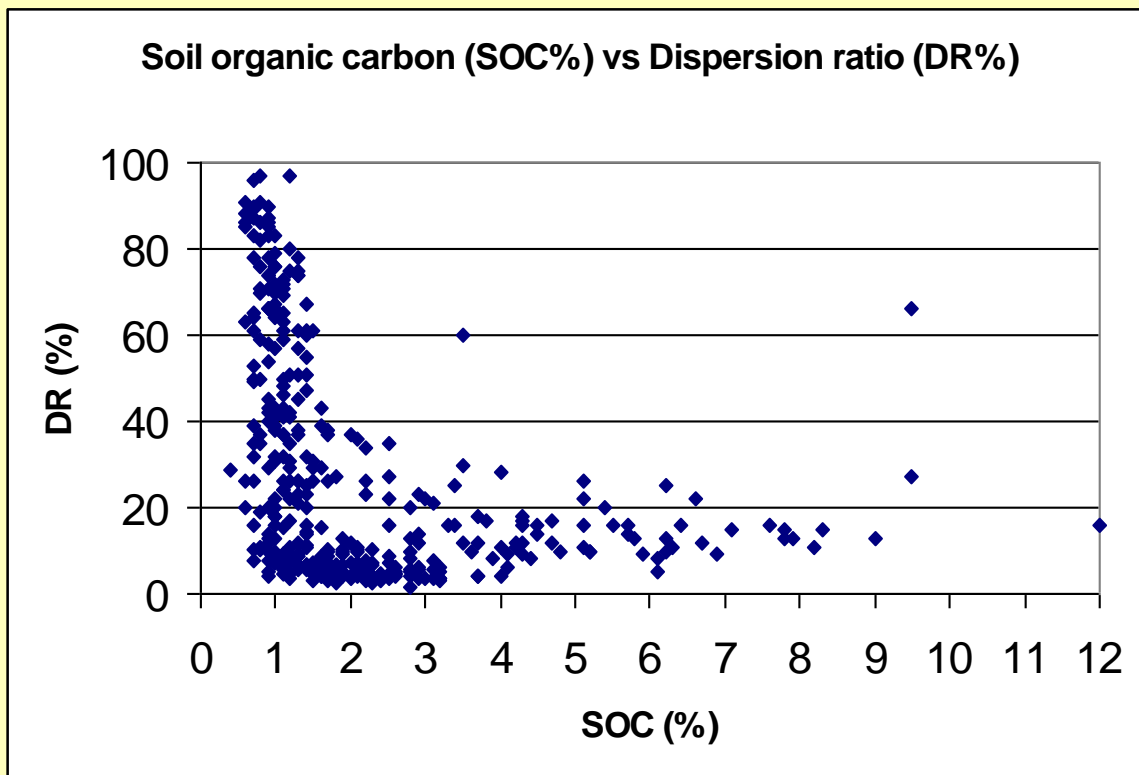


Figure 1 Relationship between soil organic carbon and dispersion ratio.

The structural collapse results in a thin superficial cap that reduces infiltration, see figure 2 below, increasing the runoff from rainfall and often impairing crop emergence. At its worst, this capping completely seals the soil surface (see figure 3 below), a particular problem in soils with seasonal subsoil wetness (see soil alerts for 'slowly permeable soils with seasonal wetness' & 'soils affected by groundwater').

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Figure 2 Surface capping following autumn rainfall on a field of winter wheat, Salwick series

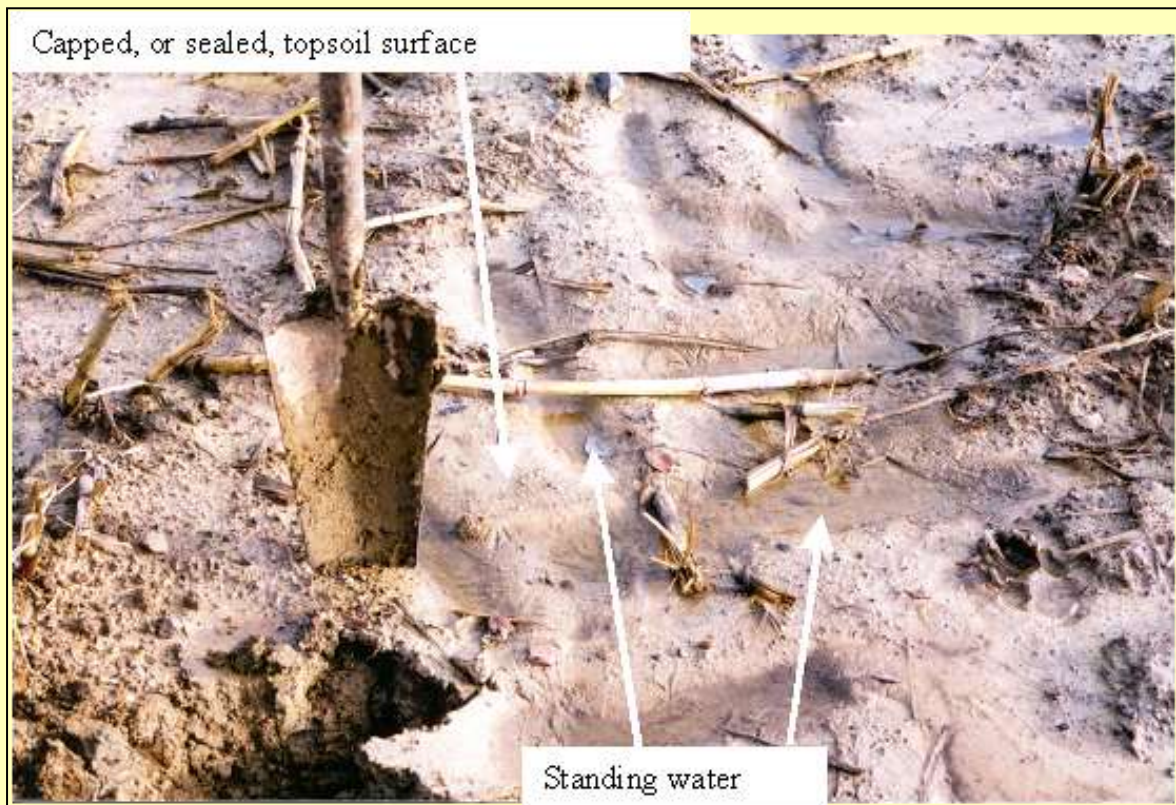


Figure 3 Surface capping & sealing, following late-harvested maize on soils association 572i

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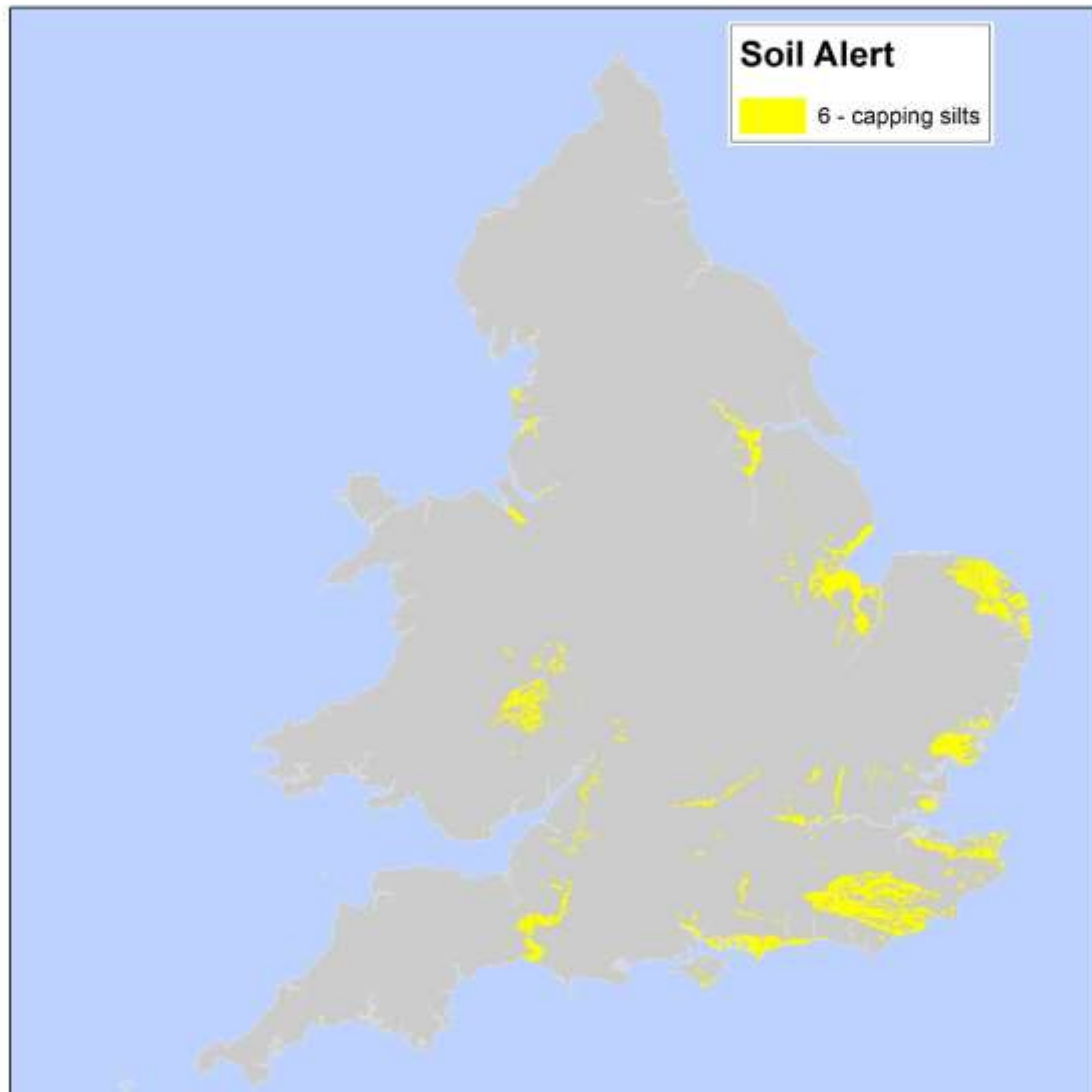


Figure 4 Distribution of capping silts in England and Wales

On the National Soil Map of England and Wales, these types of soils can occur in Soil Associations:

[532b ROMNEY](#)

[541m SOUTH PETHERTON](#)

[541s WICK 2](#)

[541t WICK 3](#)

[571i HARWELL](#)

[571p ESCRICK 1](#)

[571y HAMBLE 1](#)

[571z HAMBLE 2](#)

[572i CURTISDEN](#)

[572k BIGNOR](#)

[573b Wix](#)

[582e TENDRING](#)

[812b WISBECH](#)

[841a Curdridge](#)

[841e PARK GATE](#)

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Soil series affected by this alert:

5.32 ROMNEY		5.72 NUPEND	(Assoc. 571p only)
5.41 BEARSTED	(Assoc. 572i only)	5.72 WICKMERE	
5.41 SHERINGHAM		5.73 BREAMORE	
5.41 SOUTH PETHERTON		5.73 HOOK	
5.41 WICK	(Assoc. 541s & t only)	5.73 WIX	(Assoc. 573b only)
5.43 AYLSHAM		5.81 BRADFIELD	
5.62 SNARGATE		5.81 MAXTED	(Assoc. 582e only)
5.71 BRIDPORT		5.82 TENDRING	
5.71 ESCRICK	(Assoc. 571p only)	7.11 BURITON	
5.71 HAMBLE		7.11 CRANBROOK	
5.71 HARWELL		8.11 ROCKCLIFFE	
5.71 MAPLESTEAD	(Assoc. 573b only)	8.12 WISBECH	
5.71 SELBORNE		8.31 DEEPDALES	
5.72 BIGNOR		8.41 CURDRIDGE	(Assoc. 841e only)
5.72 CURTISDEN		8.41 PARK GATE	

Farm Management

There are two key strategies that can significantly reduce the tendency to form surface caps in susceptible soils:

- Minimising or eliminating periods when the soil lies bare.
This is particularly important over the late autumn, winter, and early Spring.
- Maintaining topsoil organic carbon contents well above 1.5% and preferably above 2%.

Both strategies are suited to current ideas for 'regenerative farming' and, more importantly, are supported by Defra's Sustainable Farming Incentive (SFI) scheme which provides payment for 'actions for soils', that are focussed on 'improving soil health, structure, organic matter and biology'. To take advantage of this, applicant's whose land contains these types of soils should ensure they are included as part of their soil assessment (Action SAM1), whilst their soil management plan should include the use of multiple species winter cover (Action SAM2) and/ or the incorporation of herbal leys into the crop rotation (Action SAM3). The plan should also include regular sampling and monitoring of topsoil organic carbon content to ensure that levels are maintained at around 2% or more.

Construction

Because of the erodibility of these soils, civil engineering projects that involve soil stripping, storage and eventual replacement should minimise damage from rainfall run-off by ensuring stockpile gradients are as gentle as site constraints permit, whilst seeding of freshly constructed stockpiles should be carried out as soon as possible, before capping occurs,

Sources of further information

More detailed information on Defra's SFI Actions for Soil can be found on: [SFI actions for soils - GOV.UK](#).

More specific information on soil associations is also available in LandIS: [LandIS - Land Information System - Associations](#).