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GUIDANCE FOR FARMERS CONSIDERING LEAVING LAND WITH A ROUGH SURFACE



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Leaving land bare (with a rough ploughed surface) over winter is a high risk operation that can result in run-off and soil erosion unless it is carefully managed.

Land that has been harvested with a combine harvester, forage harvester or mower can be left bare between the day after harvest to the 1 March provided:

1. It is left with a rough surface to encourage the infiltration of rain and;
2. The site is not considered to be at high risk of erosion and;
3. Soil does not run off down slope or off site (field parcel) and;
4. You have undertaken a rough surface soil risk assessment and submitted it to Welsh Government on or before the day the land is cultivated to leave a rough surface

If you choose to leave land bare between the day after harvest and the 1 March it is your responsibility to ensure that the above points are met in full. Failing to observe <u>any</u> of these requirements could result in a financial penalty being applied to your payments (e.g. BPS / SFS) The following is guidance that should be taken into account when you assess any fields.

General
Under particular circumstances rough surfaces can provide storage for rainwater allowing water to collect before it soaks into the soil, thus helping to slow down run-off and prevent soil erosion. Rough surfaces can also reduce wind speed at the surface helping to prevent soil erosion caused by wind.

Key Considerations
The following highlight the aspects farmers should consider before deciding to leave a rough surface.

The risk of soil erosion may increase if a field is affected by more than one of the following factors, careful consideration should be given to any field where you propose to cultivate rough surface.

1. **Soil texture**

It is important to know the soil types on the farm, especially in relation to wetness and stability, in order to help judge the risk of soil erosion. Soil texture refers to the relative proportion of clay, silt and sand. The threat of run-

off and erosion is affected by small differences in texture because it influences infiltration of water through the soil and the stability of the soil.

Soils with large proportions of sand are not cohesive and have a high risk of erosion by water and wind and may not be suitable for leaving with a rough surface cover.

Soils with large proportions of clay have a high risk of water run-off. This water may carry soil particles so these soils may not be suitable for leaving with a rough surface cover.

Soil textures can be obtained from an analysis of particle size distribution. The diagrams at Annex A show the percentage of sand, silt and clay within each textural class and a hand texture assessment which can be carried out in the field and is adequate for most situations.

Medium soils (sandy clay loam, clay loam or silty clay loam) would be more suitable to being left with a rough surface, than heavier or lighter soils.

2. **Soil Compaction**

Soil pits can be dug with a spade to assess soil structure and identify soil compaction. Suitable dimensions are between 30-50 cm wide by 30-50 cm deep. They should be located in representative areas of the field (e.g. avoid headlands and gateways).

Soil compaction creates poor air and water movement in the soil which can lead to increased run-off of soil and inputs. A compacted soil will show one or more of the following features:

- Plant roots travelling horizontally, restricted rooting depth, stunted roots
- Horizontal cracking in the soil
- Absence of holes (pores) or any distinct cracks or channels
- Is difficult to penetrate with a knife in the compacted layer
- Ponding of water in or on the surface of the soil
- Extreme compaction can create greenish-blue colours and an unpleasant smell

Any soils which are compacted may not be suitable to leave with a rough surface unless the ploughing will resolve the compaction.

3. **Slopes**

Steeper slopes can cause water to run-off rapidly especially where water percolation into the soil is slow e.g. where soil structure is poor and on naturally slowly draining soil. Highest risk fields are those greater than 7° and so extra consideration should be given to preventing soil erosion on these sites.

Fields with gentle slopes of less than 3° are at lower risk of rapid erosion and runoff. However water can still run and gather momentum on gentle slopes, especially if the infiltration rate is slow or the slope is long.

Slope angles should be assessed as accurately as possible. However, slopes are frequently uneven and variable and it is important to determine the overall risk of leaving an area bare with a rough surface.

A field with an average slope of greater than 7° may not be suitable to cultivate and leave with a rough surface.

4. **Field Size and Valley Bottoms**

Significant volumes of water can accumulate in large fields (greater than 10 hectares) with long slopes. Valley bottoms can concentrate water flow causing channel erosion.

Wind erosion tends to occur on unsheltered land exposed to strong winds and in areas where wind is funnelled.

A large field with long slopes may not be suitable to cultivate and leave with a rough surface.

Good Practice

Where fields are suitable to be left with a rough surface the following points should further reduce any risk that soil erosion actually occurs. You are reminded that where land is left with a rough surface but evidence of soil erosion down the slope or off site is discovered, a penalty will be applied, even where a soil risk assessment has been undertaken.

- Avoid leaving long steep slopes bare, even where the slope averages less than 7 degrees.
- Avoid channelling of water onto roads or into watercourses. Fields adjacent to watercourses are at higher risk of causing water pollution associated with run-off than those where there is no connectivity to watercourses.
- Plant grass strips in natural drainage pathways (prone to gulley erosion) to help stabilise the soil and to act as a soak-away.
- Plant shelterbelts and hedgerows to prevent wind erosion.
- Remove compaction by cultivating and sub-soiling at the correct depth when the soil is suitably dry.
- Aim for a high level of organic matter.
- Use minimal cultivation techniques or shallow ploughing.
- Plough across the slope where possible and safe.
- Leave at least a 5 metre wide strip unploughed and uncultivated at the bottom of sloping fields or install sediment fences to further safeguard against soil loss.

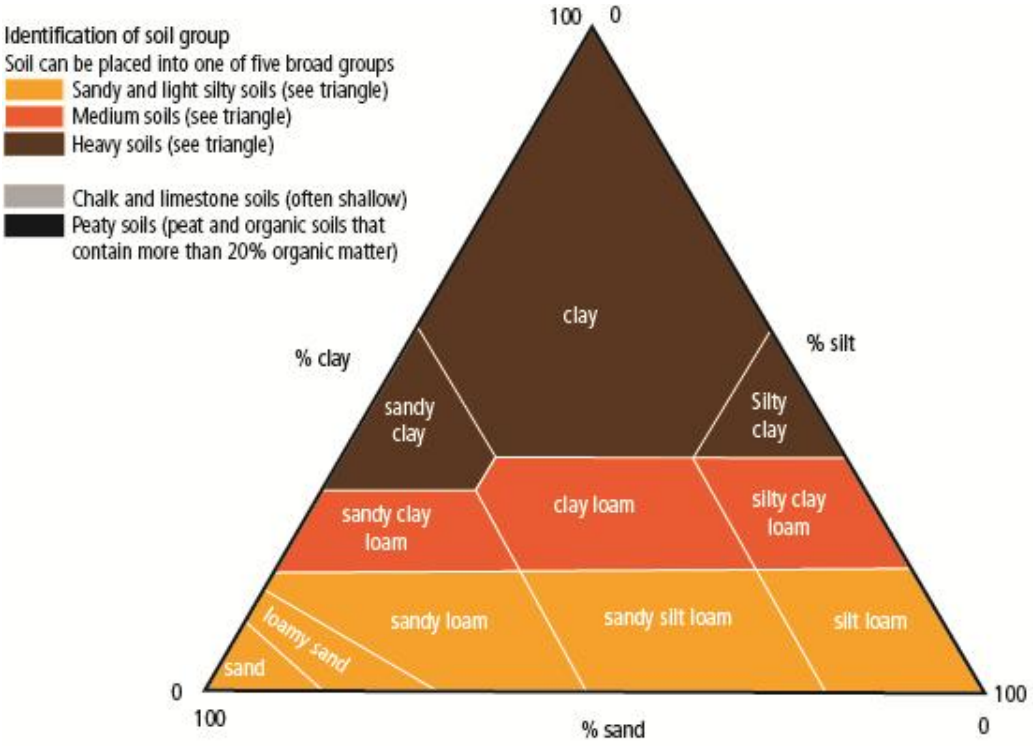
ANNEX A

Diagram showing the percentage of sand, silt and clay within each textural class

Limiting percentages for the 11 main texture classes are defined within the triangular diagram below.

Sand, loamy sand, sandy loam, sandy silt loam and sandy clay loam classes may be subdivided according to the sand size:

Fine – more than two thirds of sand less than 0.2mm
Coarse – more than one third of sand greater than 0.6mm



Source: Environment Agency Think Soils

Diagram showing a hand texture assessment which can be carried out in the field

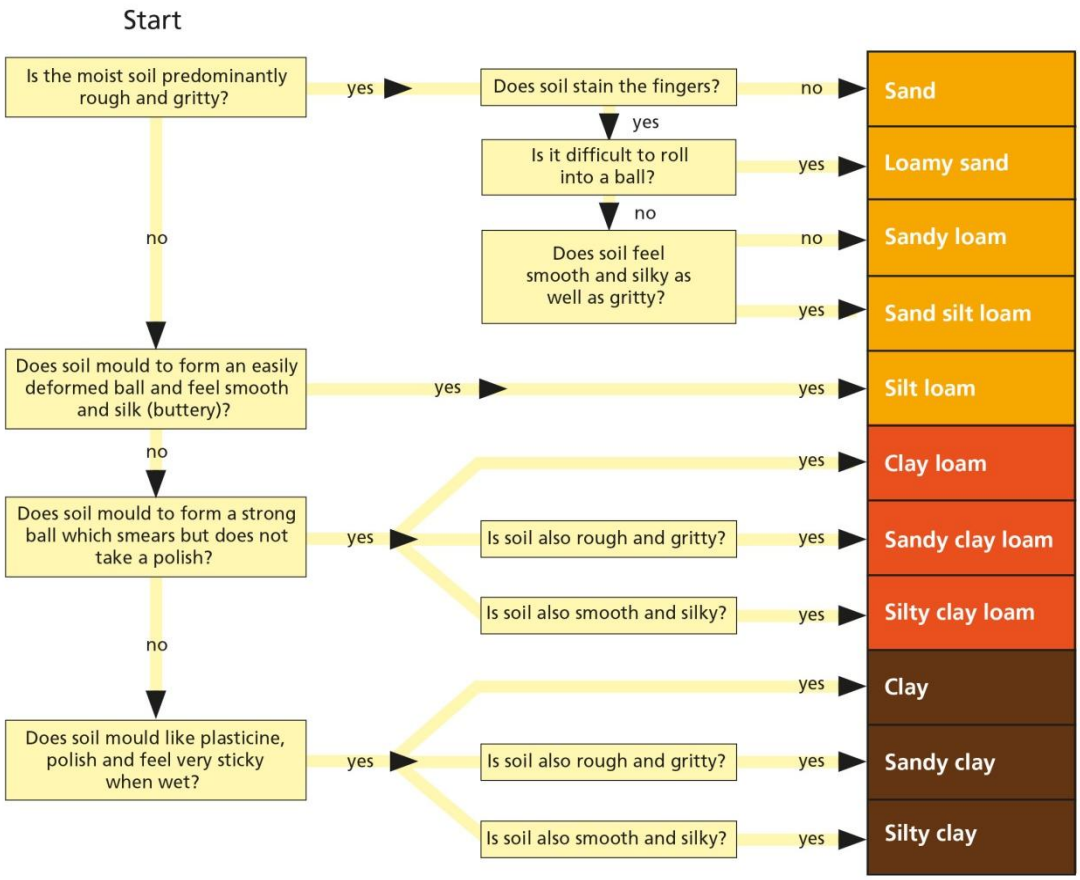
Accurate measurements of soil texture requires laboratory analysis, but for practical purposes, texture can be assessed by hand, using the following method:

Take about a dessert spoonful of soil. If dry, wet up gradually, kneading thoroughly between finger and thumb until soil crumbs are broken down. Enough moisture is needed to hold the soil together and to show its maximum stickiness. Follow the paths in the diagram to get the texture class:

Diagram showing a hand texture assessment which can be carried out in the field

Identification of soil texture

For practical purposes you can assess soil texture by hand (follow the diagram below). Take about a dessert spoonful of soil. If dry, wet up gradually, kneading thoroughly between finger and thumb until crumbs are broken down. Enough water is needed to hold the soil together and to show its maximum stickiness.



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