

FARM SUSTAINABILITY STANDARDS

4

Protection of
Soils

UNDERPINNING REQUIREMENTS

Sustainable Agriculture Programme



Department of
**Agriculture, Environment
and Rural Affairs**
www.daera-ni.gov.uk

An Roinn
**Talmhaíochta, Comhshaoil
agus Gnóthaí Tuaithe**

Department o'
**Fairmin, Environment
an' Kintra Matthers**



Introduction

Healthy soils deliver increased yields of high-quality crops and grass. Soil with a good structure containing adequate organic matter results in improved water-holding capacity, an extended grazing season and improved resilience during fluctuating weather conditions.

Whilst soil erosion is not currently a major issue in Northern Ireland because of our mostly grass-based agricultural enterprises, land cultivated for arable crops; and livestock grazing can damage soils close to waterways.

Soil erosion rates are highly variable and sensitive to factors such as soil type and condition, crop type, slope, land management, cultivation technique and rainfall intensity.

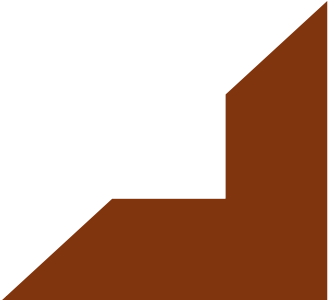
Erosion can lead to increased sedimentation and eutrophication in rivers and streams, which can harm water quality and aquatic ecosystems.

Agricultural soils are composed of organic and mineral matter, water and oxygen. Soil organic matter (SOM) is vital to soil health. Soil organic matter forms as a result of decomposition of plant and animal residues that enter the soil system. It is composed of crop residues, dead root material, soil organisms, and animal manures. It consists of three main components including- actively decomposing material, stable organic matter (also known as humus) and living soil organisms. Soil organic matter is vital for healthy and productive agricultural soils, as it plays a positive role in the chemical, physical and biological functions of the soil. Maintaining SOM content in agricultural soils at optimum levels is important for plants and soil life because it contributes positively to healthy soil structure, nutrient cycling and water retention. It can also increase crop productivity and help reduce fertiliser requirements, soil erosion, flooding and greenhouse gas emissions.

Soil organic matter plays a key role in carbon sequestration as its main component is organic carbon. Carbon storage in soil is the balance between the amount of organic material input and the pace at which this is decomposed. Therefore, increasing the level of organic matter in the soil increases its potential to store carbon.

Aim

The aim of these requirements is to protect soil as a resource by preventing soil erosion, ensuring minimum soil cover and also to maintain soil carbon stocks.





Requirements

The main requirement is that farmers must ensure that soil is protected from soil erosion.

Farmers Must

Maintain Minimum Soil Cover

Background

Maintaining minimum soil cover reduces the risk of soil erosion and loss of nutrients from arable land in winter. The standard below is also a requirement of the Northern Ireland Nutrient Action Programme Regulations.

Requirement

1.1 Farmers must ensure that after harvesting, from the date of harvesting to 15 January in the following year, one of the following conditions is met on the land at any time:

- the stubble of the harvested crop remains in the land; or
- the land is sown with a crop which will reduce the risk of soil erosion; or
- where soil or weather conditions prevent a subsequent crop from being sown, appropriate measures are put in place to limit soil erosion.

Exceptions

You will not be in breach of this requirement if you have prepared the land as a seedbed but are unable to sow the crop within 10 days (because to do so would result in a breach of the FSS standard on waterlogged soil) or because extreme weather conditions make this impractical. In either case, the land must be sown as soon as practicable.

Where DAERA has varied or suspended any of these requirements it shall publish directions to you in the area concerned stating, with reasons, the details and duration of the variation or suspension, and you must comply with the new requirements as outlined in the directions.

If your land is to be used for a ploughing match or ploughing practice between harvest and 15th January you may apply to the Department for permission not to comply with this standard on the area on which the ploughing match will take place. In assessing your application, the Department will need to be assured that the land on which the proposed ploughing match will take place is not at risk of soil erosion or nitrate leaching. In cases where permission is granted this standard will not apply.



Guidance

Where it is not possible to sow green cover, the standard allows you to put in place appropriate measures to limit soil erosion which could include non-inversion cultivation methods such as deep grubbing or chisel ploughing after harvest where that harvest has been late in the season. However, deep grubbing or chisel ploughing should only be carried out where soil conditions are favourable and limited to areas affected by compaction. The non-inversion action of deep grubbing or chisel ploughing in late autumn helps to reduce runoff and nutrient loss from soils compared to traditional ploughing. Leaving residues undisturbed may also be an option where soils are waterlogged and conditions are not suitable for establishing a cover crop.



Chisel ploughing

Crops harvested late in the year and during the winter, such as maize and field vegetables, are a common cause of compaction causing run-off and soil erosion. Where land is compacted with wheel ruts and especially where there is a risk of soil erosion, it can be cultivated by deep grubbing or chisel ploughing to remove compaction and allow water infiltration into the soil

With slow draining, heavy soils on slopes it is advisable not to grow high risk crops that will be harvested late in the year.



Chisel ploughing (on the left of the picture) has been carried out to prevent run-off following harvesting of swedes in the winter. Run-off causing soil erosion in the centre and foreground is from compacted wheel ruts.

Cultivation within 1 metre of the edge of the watercourse.

Background

Machinery damage to soil increases soil compaction and the risk of soil erosion, which can increase the sediment load of a river resulting in diminished water quality. An uncultivated grassland buffer adjacent to a watercourse will help prevent runoff especially on steeply sloping fields.

Requirement

1.2 Farmers must ensure that arable land is not cultivated within 1 metre of the edge of the watercourse (excludes sheughs).

Guidance

You should not cultivate within 1 metre of the edge of a watercourse to avoid the risk of soil erosion and loss of carbon stocks to the watercourse.

Uncultivated strips adjacent to watercourses also provide valuable habitat for a range of plant and animal species.

Care should be taken to avoid spray drift or fertiliser spreading onto the margin or into the watercourse, as this will reduce plant diversity and encourage weeds and could damage water quality.

You should consider increasing the width of the buffer strip to provide additional waterway protection and biodiversity benefits.

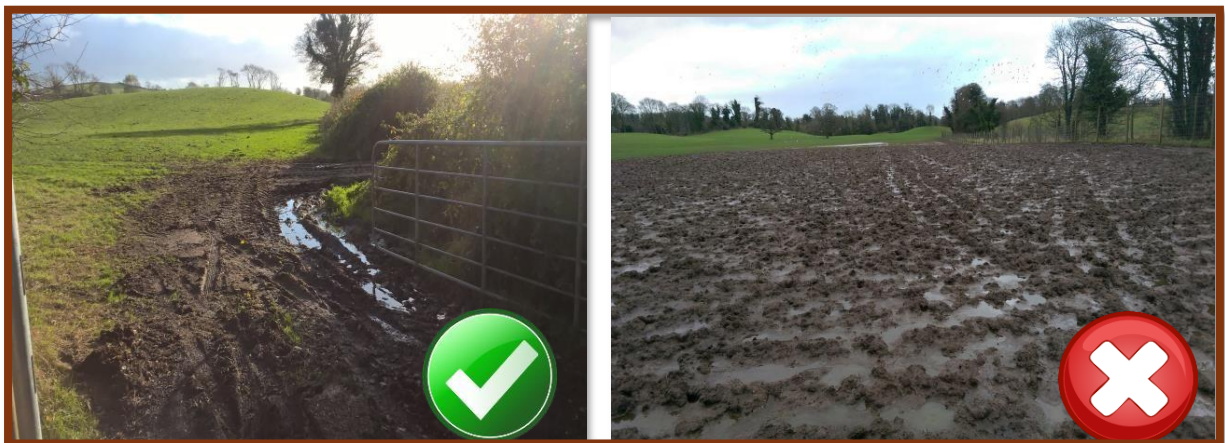
Poaching / Trampling / Rutting

Background

Trampling by livestock increases soil compaction and the risk of soil erosion, which can increase the sediment load of a river, resulting in diminished water quality.

Requirement

- 1.3 Farmers must prevent land from being excessively trampled, poached, or rutted.
Farmers must ensure supplementary feeding/watering sites and sacrifice areas are rotated and managed to prevent excessive trampling, poaching or vehicle rutting to minimise soil erosion and must not cause runoff to waterways.
Sacrifice areas must have at least 90% grass/crop coverage by the end of the following spring.



Poaching must not result in soil erosion

Exceptions

Land located within 5 metres of a gateway or laneway and is not a semi-natural habitat;

Where poaching / rutting is a necessary consequence of measures taken to ensure animal welfare during periods of extreme weather conditions.

Where poaching of soil is a necessary consequence of:

- mechanical operations that are required to improve the drainage of the waterlogged soil;
- works that are required to ensure animal or human welfare; or
- harvesting a crop of fresh vegetables or fruit to meet contractual deadlines or where such produce would deteriorate if not harvested urgently.



Guidance

Across all farmed land (arable and grassland), you should aim to reduce soil compaction from livestock and machinery. Minimise fieldwork when soils are wet or waterlogged and more easily compacted, reduce axle weights where possible and make use of tyre technology and set tyre pressures accordingly to reduce pressure on soil.

Regularly rotate livestock to fresh pasture in periods of heavy rainfall. If necessary, consider the use of animal housing to reduce soil damage.

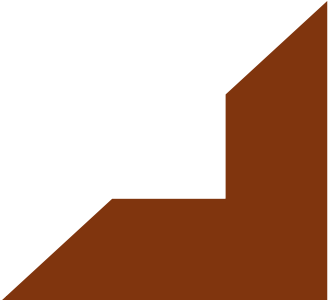
Brassica fodder crops should not be grown in steeply sloping fields with a high soil erosion risk. Strip grazing from the top of sloping fields can help reduce the risk of soil run-off. Watercourses and ditches alongside crops grazed through the winter are very susceptible to soil erosion through livestock poaching and destabilising of riverbanks. Leaving an uncultivated grass strip next to such features, and temporarily fencing them off or grazing towards them, will help prevent damage.

Sacrifice areas, if not managed properly, can cause soil erosion, nutrient runoff and destroy soil structure and the original vegetation cover. In particular they cause long-term environmental damage to semi-natural habitats. Nutrient run-off may cause pollution of a neighbouring waterway, borehole or well.

Sacrifice areas will only be permitted on improved grassland/arable land where the land is flat and must be located ten metres from waterways, or 50 metres from boreholes or wells or 250 metres from boreholes used for a public water supply. Sacrifice areas must not be situated on or adjacent to archaeological sites.

The area must be ploughed and sown in the following spring. Natural regeneration (recovery of the sward) and surface seeding will be permitted provided there is at least 90% grass/crop coverage by the end of spring.

The management of out-wintered livestock must comply with the Northern Ireland Nutrients Action Programme Regulations.



Overgrazing

Background

Overgrazing is grazing land with livestock in such numbers as to significantly damage the growth, quality or species composition of the vegetation. Overgrazed sites have little or no plant cover and there may be evidence of run-off or standing water.

Overgrazing can result in soil erosion, increase the risk of flooding and cause damage to semi-natural habitats and archaeological features. Overgrazing is often associated with evidence of poor animal condition.

Requirement

- 1.4 Farmers must ensure that there are no significant areas of bare soil (no visible remains of grass/vegetation), deep bare soil trenches/ruts caused by vehicle tracks.

Exceptions

This standard does not apply to areas within five metres around gateways/laneways provided this land is not a semi-natural habitat, archaeological site within 10 metres from waterways, or 50 metres from boreholes or wells, or 250 metres from boreholes used for a public water supply.

Exceptions will be granted where it is necessary for the protection of animal welfare during periods of extreme weather conditions.

Where this standard conflicts with the commitments under management agreements entered into by the farmer in relation to any Area of Special Scientific Interest, Special Protection Area or Special Area of Conservation;

Guidance

Signs of overgrazing are a combination of the following: very short sward, grasslands with a sward height of less than 3cm, rough grassland/moorland with a sward height of less than 5cm, a high density of cattle/sheep dung and frequent patches of bare ground.

Inappropriate management of supplementary feeding sites, for example, round feeders placed on wildlife areas (semi-natural habitats), on heather moorland, in woods or on archaeological features will result in damage.

Graze livestock in numbers appropriate to the ground and climate conditions. Keep stock numbers limited to the carrying capacity of the land. Regular shepherding on

open hills may be required to prevent localised overgrazing. Move livestock once any signs of overgrazing become apparent.

If your land is in an agri-environment scheme, you must comply with the stocking density requirements so you should check your scheme agreement for details and guidance.



Feeding of livestock in broadleaved woodland is not permitted

Riverbank Erosion

Background

Erosion caused by flowing water, heavy rainfall, and human / livestock activity can gradually undermine riverbank strength. Riverbank erosion can be costly. It can result in loss of productive land and damage to fencing, tracks and riverbank structure. Left unchecked, this erosion can result in collapsed banks and damaged ecosystems. Maintaining the riverbank will improve water quality, reducing sediment run-off keeps rivers cleaner. Livestock access e.g. cattle trampling and drinking from rivers can cause damage to riverbanks.

Requirement

- 1.5 Farmers must limit the erosion of the banks of water courses (excluding sheughs), from overgrazing or heavy poaching by livestock. Farmers must limit poaching adjacent to watercourses.

Exemptions

Where poaching is a necessary consequence of measures taken to ensure animal welfare during periods of extreme weather conditions.

Guidance

Fencing riparian areas to exclude livestock from waterways is an effective method to reduce the impacts of cattle access.

Where fencing is not possible consider reducing livestock numbers during and following high rainfall.



Riverbank erosion due to poaching.

Supplementary Feeding Site Location

Background

Supplementary feeding sites are essential to many farms especially during the winter period to provide feed to livestock. Good supplementary feeding site management will result in minimal damage to the underlying and surrounding plant cover and to the environment.

Positioning feed troughs and silage/hay feeders away from watercourses will help prevent runoff of soil particles and animal manures.

Requirement

- 1.6 Farmers must ensure that supplementary feeding sites (includes sacrifice areas) are located more than 20m from waterways, or 50m from boreholes or wells, or 250m from boreholes used for a public water supply.

Guidance

When placing feeding troughs or hay/silage feeders in the field, check the location of all field waterways and ensure the feeding site is located more than the required distance away from all waterways.



Livestock Drinking Points

Background

Livestock access to mains water or pasture pump drinking sites is essential to the welfare of farm animals. These sites avoid the need for animals to enter farm watercourses to drink and when managed correctly provide significant environmental benefit.

Requirement

- 1.7 Farmers must ensure that livestock drinking points are located at least 10m from waterways, where there is a significant risk of water pollution caused by soil erosion.

Guidance

Excessive trampling/poaching by livestock or vehicle rutting can occur around drinking sites and may present a significant risk of pollution if sited close to a waterway and not managed appropriately according to ground and climate conditions.

Significant risk of pollution may arise from one or more of the following:-

- Bare soil with no visible vegetation;
- Bare soil often mixed with excessive livestock manure;
- Deep bare soil trenches/ruts caused by vehicle tracks; and
- Waterlogged soils with livestock 'wading in muck'.

Remember to regularly check drinking sites for poaching and potential runoff, particularly during wet weather, and move livestock if there is a risk of pollution of any waterway.

New drinking points should be installed more than 10m from waterways.

