Best Practice

Soil Management

Sheet 16.0a

Introduction

Why change?

Soil is the most important resource on your farm. Good soil management can help you to save money and protect the environment by:

- improving yields and profits
- improving soil structure
- reducing soil damage and loss
- reducing waterlogging
- reducing watercourse pollution
- reducing inputs and carbon footprint
- increasing long-term productivity and sustainability.

Valuable topsoil can be lost through erosion

Steps to Success

1. **Understanding** the soils on your farm is the key to good soil management. Soil is a finite, non-renewable resource so maintaining your soils in good condition is fundamental to the long-term productivity of your farm. Know your soils so that you can protect them for the future by:

- checking the condition of your soils on a regular basis. Consider characteristics such as texture, structure, organic matter, drainage and slope patterns. Use this information to map erosion risk across your farm (see Information Sheet (IS) 17)
- recognising soil loss and damage on your farm. Look for evidence of soil erosion and degradation, such as brown water run-off, poaching, capping, compaction and rilling during rainfall.
- using routine farm walks to check on poor crop growth , bare patches and water-logging
- Use this information to highlight vulnerable areas and cropping practices across your farm (see IS 18)
- planning the timing of your operations to suit your soils. Timeliness is the key to good soil husbandry. For example, cultivation when the soil is too moist can lead to compaction and poor drainage, thereby increasing the risk of soil loss and a reduction in productivity (see IS 19)
- managing field drainage and ditches to avoid water-logging and maintain optimum conditions for crop growth (see ISs 20 and 21).
- take advice from a BASIS, soil and water qualified advisor

2. **Map** the risk of soil erosion and run-off on your farm on a field-by-field basis. Identify vulnerable soils and crops, as well as opportunities for improved soil management.

3. **Plan** your stocking and cropping patterns to minimise the risk of soil erosion and damage, and to maximise long-term productivity. Correct any existing problems and avoid the risk of future costs by adapting the layout of your farm, matching land use to erosion risk, and protecting your soils using crop establishment techniques, crop cover and vegetation where appropriate (see IS 22).

It can take upwards
of 150 years for 1 cm of topsoil to develop.
With poor soil management this can be lost after only one rainstorm.
So protect your soils to protect your profits.

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Practical examples

Poor management, high costs

Poor soil management can have a negative impact on the structure, organic matter content and drainage of soils. It can lead to an increased risk of run-off and soil erosion, with associated economic and environmental costs such as:

- crop damage and reduced yields
- loss of seed and nutrient rich topsoil
- need for repeat field operations/cultivations
- watercourse pollution by sediments, nutrients and chemical contaminants
- increased flood risk, damage to drainage systems, highways and properties
- legal fees and fines arising from damage to habitats and fisheries.

For example, serious erosion in Rottingdean, Sussex, during 1987 caused on-farm costs of £13,000 and off-farm costs of £420,000

Good management, high savings

Good soil management will help to improve its capacity to hold on to nutrients, break down pesticides and limit erosion,

In this example, to avoid compacting a wet clay soil, slurry was not spread on a 5ha bare forage maize field during the winter months. To achieve this flexibility to spread when conditions were suitable the farmer ensured he had sufficient slurry storage.

The production of maize at 33% dry matter (DM) was 13 tonnes of DM per ha. at £800 per ha, the crop was worth £4000. It is estimated that soil compaction would have reduced yields by 25%.

Good practice therefore saved the farmer £200 per ha, a total of £1000. The payback was less than one year.

Riling causes crop and soil loss

Capping increases soil loss

Remember

- Understand the soils on your farm so that you can protect them from erosion and damage, and maintain a sustainable resource for the future.
- If soil erosion and run-off from your farm causes water pollution you could be liable to prosecution costs and fines under the Water Resources Act 1991.

Interreg France (Channel Manche) England
Channel Payments for Ecosystem Services
European Regional Development Fund
CPES
Pinpoint Rivers Trusts and Farmers working together for water
The Rivers Trust
Westcountry Rivers Trust

This information sheet is part of a series produced by Westcountry Rivers Trust providing farmers with advice on land management practices to protect water bodies. The advice enables farmers to use farm resources more efficiently, helping to meet Nitrate Vulnerable Zone, Cross Compliance, Farming Rules for Water and other regulations while protecting our environment and natural resources.