

General diffuse pollution prevention solutions



What is diffuse water pollution?

The loss of potential pollutants such as nutrients from agricultural activities can have a detrimental impact on water quality and aquatic ecosystems. In some areas of Scotland, inappropriate land use and management are the main causes of rural diffuse pollution. Soil erosion can be caused by the action of water, wind or tillage and can lead to the transport of valuable soil particles and nutrients such as nitrogen (N) and phosphorus (P) into water courses.

Consider Source → pathway → receptor.

The key **pathways** that lead to agricultural N and P diffuse water pollution are:



Soil surface runoff and erosion (often exacerbated by compaction and structural degradation), Tramlines, Hotspots (e.g. gateways), Drain-flow and Leaching.

See the next page for options to prevent or reduce diffuse pollution.

General solutions if you have identified diffuse pollution issues

Create and implement a nutrient management plan.

Alleviate compaction (e.g. use **aeration** or **sward lifting** of grassland to prevent surface run-off).

Avoid erosion (e.g. if fields slope towards drainage ditches or a river course, **cultivate across the slope**). Provide drinkers away from watercourses.



Consider using **tramline management** in arable systems (cereals and root crops) to improve water infiltration, especially if tramline run-off is an issue.

Ensure **buffer strips** are present at the bottom of sloping fields and next to rivers and streams. Consider using complementary in-field buffers in the most vulnerable fields.

Further reading:

Valuing Your Soils guidance (<https://www.farmingandwaterscotland.org/soil-nutrients/valuing-your-soils/>)

Prevention of Environmental Pollution from Agricultural Activity (PEPFAA) code (www.gov.scot/policies/agriculture-and-the-environment/pepfaa/)

Farming and Water Scotland (<https://www.farmingandwaterscotland.org/know-the-rules/>)

Soil erosion risk maps (<https://soils.environment.gov.scot/maps/risk-maps/>)



How to Prevent or Reduce Diffuse Pollution

Action	How to implement/benefit
Avoid soil compaction	<ul style="list-style-type: none"> • Reduce field traffic in wet conditions or after heavy rain • Use larger tyres/lower tyre pressure • Avoid heavy grazing on wet soils
Assess the extent of soil compaction	<ul style="list-style-type: none"> • Use VESS to establish structural problems, depth of compaction and appropriate management
Alleviate soil compaction problems	<ul style="list-style-type: none"> • Use machinery such as aerators/sward lifters (grassland) and subsoilers (arable and grassland) to loosen soil below the depth of compaction
Tramline management	<ul style="list-style-type: none"> • Re-align tramlines away from slopes, increase tramline spacing and limit machinery use on fields in winter • Use tramline management techniques • Very flexible tyres
Assess field drainage	<ul style="list-style-type: none"> • Check field drainage is functioning and maintain to avoid waterlogging • Consider installing new drainage system if necessary
Stubble and crop residues management	<ul style="list-style-type: none"> • Leave stubbles/residues for surface cover and increased topsoil organic matter
Test soil nutrients to assess crop off-take Create a nutrient management plan	<ul style="list-style-type: none"> • Implement nutrient management plan for specific crops and rotations to ensure the right amount of nutrients are present at the right time
Prevent erosion from cultivation	<ul style="list-style-type: none"> • Minimise tillage if soil type and conditions allow • If possible, cultivate in spring not winter
Livestock management	<ul style="list-style-type: none"> • Reduce stocking density in wet fields to prevent poaching, compaction and erosion • Fence off livestock and if necessary, move feeders and water troughs
Use beneficial crop rotations	<ul style="list-style-type: none"> • Change rotations to decrease frequency of vegetable cultivation • Increase grass leys or use undersown cereals • In fields of greater risk of soil erosion, avoid high erosion risk crops (e.g. potatoes or maize)
Increase soil organic matter	<ul style="list-style-type: none"> • Incorporate organic materials and use cover crops to cover bare soil over winter
Use buffer strips, beetle banks and hedges	<ul style="list-style-type: none"> • Establish buffer strips and beetle banks in arable fields to reduce soil erosion and protect water courses • Re-instate and increase hedges around field boundaries
Slurry and manure application	<ul style="list-style-type: none"> • Only apply slurry and manure to provide nutrients when crops require them and when ground conditions are suitable*

*Compliance with the diffuse pollution General Binding Rules (https://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf)