

Best Practice Information Sheet

Using vegetation to protect soils

Sheet 28.0a

Buffer zones

Why change?

Soil is the farm's most important resource. By introducing grassed buffer zones to protect your soils from erosion and runoff you could:

- reduce costs
- minimise the risk of watercourse pollution
- improve crop yields whilst reducing crop damage and inputs
- increase pest predator populations
- protect habitats, e.g. watercourses and hedgerows
- improve wildlife diversity.



Buffer zones can intercept and slow runoff.

Steps to success

- 1. Review the current situation** by examining the management of soils on your farm. Use a farm map to help consider the condition of your soils on a field-by-field basis and estimate the cost of problems such as soil erosion, runoff and watercourse pollution. Look out for signs of soil damage such as capping, rilling and brown water runoff. Identify the scope for establishing grassed buffer/settlement zones in natural drainageways and alongside important habitats such as watercourses, hedgerows and ancient woodland in order to slow down runoff, increase infiltration, remove nutrients and trap sediment. It is a requirement of cross compliance that every farm in receipt of Single Payment Scheme (SPS) payments must complete and maintain a soil protection review (SPR).
- 2. Calculate the cost-benefit of these opportunities** by considering the benefits of establishing buffer zones versus the cost of problems such as soil and nutrient loss, watercourse pollution, crop damage and reduced yields.
- 3. Prioritise** the protection of vulnerable soils that are most at risk of severe or regular erosion, e.g. sandy soils on steep, long slopes. Tackle fields adjacent to watercourses first to minimise risk of water pollution.
- 4. Develop an action plan** for establishing grassed buffer zones:
 - aim to manage soil erosion and runoff at source through good soil management and appropriate land use
 - establish grassed buffers of at least 2-6m wide in erosion-prone areas, and alongside important habitats such as watercourses, hedgerows and ancient woodland
 - create permanent grass strips through regeneration of natural vegetation where soil conditions allow, or by reseedling. Use a native seed mix that includes wild flowers and tussocky species such as Cocksfoot, Yorkshire Fog and Timothy to maximise the interception of runoff and also wildlife potential
 - mow strips frequently in the first year to encourage establishment, and control volunteer crops or weeds. Manage buffer strips by mowing annually after mid-July when seeds have set, or alternatively leave strips of uncut tussocky cover for small mammals and insects
 - avoid spreading buffer zones with pesticides, herbicides, nutrients and fertilisers
 - investigate the availability of grants for establishing grassed buffer zones on arable land and grassland. The creation of buffer zones attracts points under ELS / HLS Environmental Stewardship Schemes.
 - Under ELS, after 12 months, 2m and 4m buffer strips only need cutting to control woody growth, no more than one year in five. Buffer strips that are 6m require the 3m next to the crop edge to be cut annually and the other 3m only needs cutting to control woody growth, no more than one year in five.
- 5. Check** your buffers regularly for injurious weeds, as well as the development of runoff pathways and bypass channels.

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Buffer zones - Practical examples

Summary of practical aspects

Aim to manage pollution at source through good management practices and appropriate land use. Implement buffer/settlement zones as a second line of defence.

Ideally the ratio of dry or wetland buffer zone to farmland should be at least 1:100, i.e. 1 hectare of land should be generally needed to treat the run-off from every 100 hectares of farmland.

- Assess the possibility of using buffer zones for summer grazing, when other pasture might be unproductive during periods of drought.
- Avoid spreading wetland buffer zones with pesticides, herbicides, nutrients and fertilisers.
- Investigate the availability of funding for establishing wetland buffer zones on arable land and grassland.

Check your buffers regularly for injurious weeds and development of bypass flow and channelisation.



Dry settlement area for runoff from winter wheat

Actual examples

Farmyard runoff, previously discharging directly into the main river channel was directed into a linear floodplain wetland. The flow was diverted via a small ditch constructed, using a mechanical digger, during farm ditch clearance. The costs were negligible.

An 80% reduction in phosphorus concentration in surface water was measured and suspended sediment concentrations were also greatly reduced especially in the drier tussocky areas.

A footslope wetland downslope of permanent pasture intercepts **nutrient rich runoff**. The wetland was left undrained and fertilisers and pesticides were not applied. It is self-maintaining with light summer grazing, which brings some economic benefit. The costs are negligible

Such wetlands remove large amounts of nitrogen originating from fertiliser and manure applied to pasture upslope and minimise the risk of water pollution and therefore the risk of more stringent regulation (e.g. application of Water Protection Zone status to the catchment).



Footslope wetland intercepts nutrients in runoff

Remember

- Buffer zones are not a substitute for good soil management at source.
- Minimise soil erosion and runoff by using appropriate land use practices across your farm.
- Use buffer/settlement zones to intercept runoff, and to protect soils and wildlife habitats such as watercourses, hedgerows and ancient woodland.
- Investigate the availability of funding for establishing wetland areas under Environmental Stewardship and other agri-environment schemes

For further information: Defra (www.defra.gov.uk), Environment Agency (www.environment-agency.gov.uk), ECSFDI (<http://www.defra.gov.uk/foodfarm/landmanage/water/csf/delivery-initiative.htm>), Natural England (www.naturalengland.org.uk), Cross Compliance Helpline 0845 345 1302 (www.crosscompliance.org.uk) and ART (www.associationofrivertrusts.org.uk)



This information sheet is part of a series providing farmers with advice on land management practices to protect water bodies, produced by Association of Rivers Trusts with support from the England Catchment Sensitive Farming Delivery Initiative. The advice will also enable farmers to use farm resources more efficiently and help meet Nitrate Vulnerable Zone and Soil Protection Review requirements under Cross Compliance and environmental regulation.



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