Agriculture and Food Development Authority

Farming for Water Quality

Agricultural Sustainability Support and Advisory Programme – ASSAP

Riparian Buffer Zones

The protection of waters; (drains, watercourses, streams, lakes, wells, abstraction points for water supplies, karst features, etc.) from nutrient, sediment and pesticide losses is a key part of the Nitrates regulations. When farmers are applying fertilisers, cultivating and spraying fields they need to be aware that they are required to utilise riparian buffer zones to help minimise any potential losses.

Correctly located riparian buffer zones can minimise the impact of diffuse losses by intercepting the nutrients, sediment and pesticides and break the pathway of surface runoff.

What is a Riparian Buffer Zone?

A riparian buffer zone is an area adjacent to a water body where no chemical and organic fertilisers, cultivation and spraying can be carried out. These zones vary in width and are required to protect waters from diffuse losses of nutrients, sediment and chemicals. Farming practices can occur on these areas once the relevant fertiliser, cultivation and pesticide restrictions have been observed.

A riparian buffer zone acts to intercept and take up excess nutrients before they enter a watercourse, where they can negatively impact on water quality. Riparian buffer zones sited along these areas act to "Break the Pathway "of potential losses.

Fenced Riparian Buffer Zones adjacent to watercourses, rivers and streams act to protect the water by creating linear buffer zones where little or no agricultural activity takes place. In turn these areas

- Intercept nutrient, sediment and pesticide before reaching the waterbody
- Prevents livestock from accessing river banks and watercourse, thus helping reduce erosion and sediment addition to the watercourse.
- Provide a natural habitat for flora and fauna to establish and allow for greater biodiversity in the area
- Serve as carbon sinks as the growth of vegetation will store carbon in undisturbed soils

Diffuse Risk and Riparian Buffer Zones

- **Diffuse losses of nutrients, sediment and pesticides are impacting water quality. Diffuse losses occur at a field or farm scale where nutrients, sediment and pesticides reach waters from farming activities such as slurry spreading, spraying and cultivation.**
- **Diffuse losses of nutrients, sediment and pesticides is most likely to occur when soils are at or close to saturation. When soils are saturated or waterlogged, additional rainfall will flow over the surface towards drains or streams bringing with it the recently applied fertiliser or chemicals and sediment.**
- **Where a riparian buffer zone is in present, this will provide a 'break' between the nutrients, sediment and chemicals applied on the field thus reducing the risk of nutrients or chemicals reaching the water body.**

Factsheet No 5

Tips for improving Water Quality through use of Riparian Buffer Zones

For Riparian Buffer Zones to be effective in reducing surface water runoff or pollutants from entering waterbodies, they must be correctly located, planned and established to adequately protect the water body and intercept the potential nutrient, sediment or chemical losses.

Location and Size of Riparian Buffer Zones

1. Effective riparian buffer zones must be located at the points most likely to allow nutrient, sediment or pesticides enter a waterbody.
2. These are often low-lying parts of farms where surface runoff accumulates in high concentration (critical source areas) and is delivered to a waterbody.
3. Correctly positioned riparian buffer zones in these areas will "Break the Pathway" preventing diffuse losses reaching the waterbody.
4. In general, the wider the riparian buffer zone, the more likely it is to prevent runoff reaching the waterbody.
5. Take into consideration the likely volume of surface water run-off when deciding on the size of the Riparian buffer zone.
6. In poorer draining soils or fields, increased width will improve the protection given by these areas.
7. Minimum Buffer Zones for chemical and organic fertilisers are shown below.

Establishment of Riparian Buffer Zones

- Unfenced unfertilised riparian buffer zones, that continue to be grazed/cropped, offer a low level of protection to watercourses.
- On sloped marginal land or in natural flood plains the establishment of riparian buffer zones will offer a higher level of protection to watercourses.
- Natural vegetation or native wooded or scrubby riparian zones can absorb nutrient, trap sediment and improve water infiltration, whilst also providing other environmental benefits including increased biodiversity, carbon sequestration and improve river bank stability.

Minimum Buffer Zones to be observed:

Chemical fertiliser not to be applied within 2m of surface waters.

Organic fertilisers not to be applied within

- **5m of surface waters (extends to 10m for first 2 and last 2 weeks of the spreading season)**
- **10m of surface waters where the slope towards water exceeds 10%**
- **15m of exposed cavernous or karst features such as swallow holes and exposed rock**
- **20m of a lake shoreline**
- **25-200m of a water abstraction point for human consumption**

Maintain an uncultivated margin of 2m along all water bodies for tillage crop

Summary

By establishing Riparian Buffer Zones in key locations on your farm, you will help to protect water courses from nutrient, sediment and pesticide losses. Your local ASSAP Adviser is available to advise on the most suitable locations and size of riparian margins for your farm. These areas will not only benefit water quality but also assist in improving biodiversity and carbon sequestration.

For more information please visit **www.teagasc.ie/water-quality**

Teagasc Agriculture and Food Development Authority
An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
Department of Housing, Local Government and Heritage
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine
Local Authority Waters Programme
vibrant communities | catchment assessment | healthy waters
Dairy Sustainability Ireland