



Breaking the Pathway of Phosphorus and Sediment entering Waterways **By Ivan Kelly, ASSAP Adviser, Teagasc Galway/Clare**

When farmers are applying fertilisers, cultivating, grazing or draining land close to watercourses, careful, site specific land management can minimise the risk of Phosphorus and sediment loss and help improve water quality.

Nutrient application followed by significant rainfall on poorly draining and low permeability soils leads to overland flow transporting nutrients to waterbodies. Targeted fertiliser application at optimum times throughout the main growing season, particularly on low permeability soils, along with suitable land management can help mitigate against the risk of phosphorus & sediment making their way to our rivers and streams.

Farmers should have a Nutrient Management Plan for the farm prepared and implemented to ensure the nutrients in slurry, FYM and chemical fertiliser are directed to where most needed.

Slurry should only be applied when soil temperatures are above 6 degrees and ground conditions and weather forecast are suitable. It is important that the applied slurry gets down to the roots of plants such as grass in the growing season, preferably bare fields or fields with low grass cover. On very heavy land it may be necessary to delay spreading until after the first cut silage. Extra slurry storage allows more flexibility on spreading times, particularly in a very wet spring. Under the nitrates directive, Slurry must not be spread if heavy rain is forecast within 48 hours, but on poorly drained soil this period should be extended further. Spreading slurry with Low Emission Slurry Spreading (LESS) equipment such as a trailing shoe, dribble bar or the injector system can dramatically reduce losses and improve nutrient efficiency. LESS results in reduced sward contamination which allows more flexibility to spread on heavier covers in improved weather and ground conditions.

A riparian buffer zone is an area adjacent to a water body where no chemical and organic fertilisers, cultivation or spraying can be carried out. These zones vary in width and are required to protect waters from diffuse losses of nutrients, sediment and chemicals. The introduction of trees or rough dense vegetation in these areas can act as a barrier, shade streams and stabilise river banks while the roots can absorb soil nutrients. To be effective, riparian buffer zones must be located at the points on the farm most likely to allow nutrient, sediment or pesticides enter a waterbody. These are often low-lying parts of farms where surface runoff accumulates in high concentration.

Phosphorus does not bind to peat soil particles, so unlike mineral soils, peat soils do not have the capacity to build up a store of phosphorous. Only apply the phosphorus that the plant needs and can use for growth immediately – do not apply excess amounts of P as it risks being lost to waterbodies.

Sediment loss to water has been identified as a major concern in recent years. If sediment finds its way to the stream, it can settle on the river-bed in slow flow areas, resulting in the loss of macroinvertebrate habitat and spawning ground. Phosphorus binds to sediment and when washed into the watercourse, can cause excess nutrient load and promotes algal blooms which reduce oxygen levels in the stream. Agricultural practices such as land drainage, cattle access drinking points to streams and poor management of farm roadways can lead to loss of sediment & phosphorus.

Mitigation options to reduce sediment loss include:

- Prevent access by livestock into drains and streams and providing alternative drinking water sources.
- Divert all surface runoff from farm roadways to a field or soak pit
- Establish targeted riparian buffer zones
- Employ proper drain maintenance practices including the following:
 - Only carry out drain maintenance during the months July to September
 - Only one side of a drain to be cleaned at a time
 - Drains should not be over-cleaned, retain as much vegetation as possible
 - Ensure the bank is sufficiently sloped afterwards to prevent collapse
 - Silt/ sediment traps should be in place prior to installing new open drains leading to streams.
 - Stone should not be filled to the surface of new field drains.

Throughout the week of **Monday, 22nd March - Friday, 26th March** – Teagasc, in collaboration with the dairy processing co-ops and the Local Authority Waters Programme (LAWPRO), are running a Water Quality Week. The purpose of the week is to provide water quality focused information and advice to farmers to help minimise losses of nutrients, sediment and pesticides to water from their farming practices.

The week will cover a broad range of topics and will be available to farmers and the public, primarily through short videos posted on digital media platforms and local print media. Each day will be dedicated to a particular theme and will look to explain a range of water quality problems and provide practical advice and solutions to farmers.

Further information on water quality week is available on www.teagasc.ie/waterqualityweek, from your local co-op sustainability advisor and www.watersandcommunities.ie

Date	Theme
Monday 22 nd March	Water Quality and Catchment Management
Tuesday 23 rd March	Utilising Nitrogen Inputs Efficiently
Wednesday 24 th March	‘Breaking the pathway’ of Phosphorus and Sediment loss
Thursday 25 th March	Protecting Water from Pesticide losses
Friday 26 th March	Managing your Farmyard and Signpost Webinar

