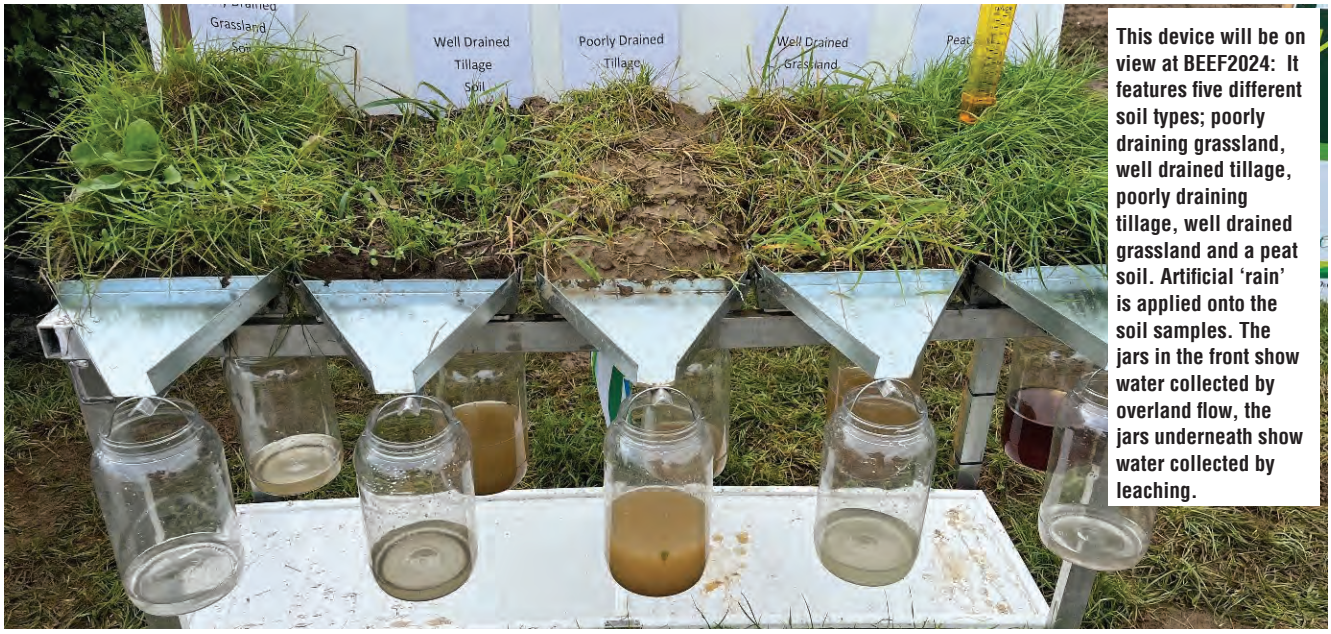

This device will be on view at BEEF2024: It features five different soil types; poorly draining grassland, well drained tillage, poorly draining tillage, well drained grassland and a peat soil. Artificial 'rain' is applied onto the soil samples. The jars in the front show water collected by overland flow, the jars underneath show water collected by leaching.

Focus on contaminants

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The loss of contaminants such as nutrients, sediment and pesticides to water from agriculture sources is increasingly under the spotlight. Recent Environmental Protection Agency (EPA) reports have highlighted the role farming plays as a source of contaminants impacting water quality

Soil type, weather conditions and land management all influence the type of contaminant lost and the pathway through which it enters the nearby stream or groundwater. When assessing farms under the ASSAP programme, Teagasc and dairy co-op advisors discuss the diffuse loss of nutrients (phosphorus and nitrate), sediment and pesticides to water with farmers. The aim is to help improve understanding of how contaminants leave a field and enter the drainage network.

This year at the Teagasc Beef 2024 Open Day in Grange the ASSAP stand will simulate field management (grassland and tillage) and weather conditions to show how water interacts with different soil types and moves through different pathways to enter water.

The demonstration will have five soil trays that are filled with different soil types. When combined with a rainfall simulator this provides a visual representation of real time losses of phosphorus and sediment by overland flow and nitrate leaching through soil to ground water.
The five soils are:

- **1** Poorly draining grassland soil
- **2** Freely draining tillage soil
- **3** Poorly draining tillage soil
- **4** Freely draining grassland soil
- **5** High organic matter peat soil

Soils 1, 3 and 5 will show that these soils become saturated quickly; water moves via the over land flow pathway bringing with it phosphorus and sediment. There is a greater potential for sediment loss on tillage fields.

Soils 2 and 4 will show that these soils allow water to move downwards through the soil profile with nitrate lost via the sub surface pathway to groundwater. There is a greater potential for nitrate losses from tillage fields in autumn where no cover/catch crop is present.

Depending on nutrient/sediment loss pathway, (overland flow or leaching), ASSAP advisors recommend actions to minimise these losses. Where phosphorus and sediment is the concern farmers can put in place 'break the pathway' measures like riparian areas, earthen bunds, sediment traps and modified drains, trees and hedges to capture and slow down contaminant losses.

Nitrate leeching

Where nitrate leaching is the concern, farmers can reduce losses through careful application of nitrogen fertilisers, taking into consideration soil temperatures, greater than 6°C; soil moisture deficits, saturated soils and drought conditions; matching applications to growth rates, particularly in spring. Distributing nitrogen fertilisers across the farm and avoiding excessive loads on the grazing platform will also help to reduce nitrate losses.

The EPA developed Pollution Impact Potential (PIP) maps are very useful in identifying areas of farmland that are at risk of phosphorus/sediment and nitrate losses to water. These also include maps that will show the flow of water overland during periods of heavy rainfall. For more information contact your local ASSAP advisor.