

CEFN Conwy: Improving Catchment Environmental Quality through better Soil and Nutrient Management

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Activities within the Conwy catchment in North Wales are of locally significant economic importance as they support a number of industries (agriculture, shellfish, and tourism). However, the catchment has suffered numerous outbreaks of microbial pollution and eutrophication events. 'CEFN Conwy' is an EU-funded project between the Conwy Rural Partnership and Bangor University. The objective is to support the local agricultural sector in the efficient management of on-farm nutrients, soil and vegetation so reducing the potential for diffuse pollution. Fifty farmers registered with the project, incorporating 12% of the total agricultural land in Conwy. The farm types were representative of those within the catchment (mixed beef suckler cow and sheep > sheep only > dairy only; mostly on improved grassland with a mosaic of fragmented and diverse habitats present between upland and lowland habitats which is farmed extensively). Farms received free soil testing (for P₂O₅, K₂O, MgO and pH) for two fields in return for taking part in an on-farm survey to collect data on imports and exports of all goods, manures and livestock in the year of 2009. These data and an empirical farm-gate nutrient model were used to estimate annual nutrient balances for each farm. From the soil testing, 77% of fields were below the optimum pH 6.0 for grass production; 77% of fields were either P index 2 or 3, with only 4% > index 3; 35% of fields were either K index -2 or +2, with 60% < index 2. For beef suckler cow and sheep farms, the mean farm N balance was +104 kg ha⁻¹ (median +97; range +26 to +189); the mean P₂O₅ balance was +8.0 kg ha⁻¹ (median +6.5; range -0.9 to +26); the mean K₂O balance was +18 kg ha⁻¹ (median +15; range +0.9 to +45). The field testing results suggest that both soil acidity and available potash are limiting production in Conwy. Estimated mean nutrient balances are comparable to benchmark estimates for beef suckler cow farms. The finding contradicts the common theory that there is scope for much reduction of nutrient application on farms. Rather, it highlights that eutrophication events are more likely to relate to improper timing of fertilizer application, not general over-application.