



A Treatment Train Approach To Catchment Management

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The treatment train approach has been attempted in a 1.6km² catchment in the River Eden as part of the UK Demonstration Test Catchment Project. The catchment is one of three detailed study catchments of 10km² that are investigating diffuse pollution losses from an intense grassland farming system. The catchment is very susceptible to saturation and high losses of fine sediment and phosphorus in storm events. The poster will show how a sequence of mitigation features that target nutrient sources and flow pathways can reduce nutrient losses. 5 features have been installed from farmyard runoff control, along polluting tracks and sediment traps in the farm ditch network. Together the features can slow, store and trap sediment and pollutants. The potential to have further impacts on flood generation and drought mitigation are also being studied. Although the features are currently small in size the ability to directly reduce pollution can be demonstrated. Hence, the potential to scale up these features to a broader catchment scale can be explored and the likely costs and benefits can be simulated. This work builds upon similar work addressing flood control features, sediment trapping on farms and methods for the direct mitigation of fast polluting pathways often referred to as Nature Based Solutions.

The designs and construction of the completed features will be shown in the poster. Early results show that the combined effect of the 5 features can significantly impact on sediment and pollution during storm events. The specific yield of the impact was 42 kg of suspended sediment/ha 0.06 kg P/ha of P trapped and 0.16 kg of N/ha. This mitigation impact is derived from an area of only 0.02% of the catchment. The potential to increase the mitigated area is thus large. Payment schemes for farmers could encourage the take up the of these methods and future maintenance regimes for managing the features would also have to be created. However, the potential to mitigate fast polluting flow paths on farms is great and could play a valuable role for the nature based approach to catchment management.