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Can tramline management be an effective tool for controlling sediment loss from arable agriculture?

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Research in the Mitigation of Phosphorus and Sediment (MOPS) project on arable sandy loam and silty clay loam soils on moderate 4˚ slopes in England has shown that tramlines – the unseeded bought lines used to facilitate spraying operations to combinable crops – can represent the most important pathway for phosphorus and sediment loss from agricultural fields. Detailed monitoring from the first two winters of this project has included event-based sampling of surface runoff, suspended and particulate sediment, and dissolved and particulate phosphorus from hillslope segments (each typically around 300 m^2) established in a randomised block design with four replicates of each treatment at each site.

Results quantify and contrast the magnitude of runoff and losses of particulate and dissolved phosphorus and sediment from conventional tramline and between-tramline areas, and compare these benchmark losses against the effect of practical mitigation options including tramline disruption and the use of offset tramlines. Analysis will contrast the effectiveness of these techniques between the sand and silty clay sites; upscale results to whole field to consider impacts on estimates of sediment and phosphorus loss used in model testing and validation; and discuss how such mitigation techniques can be integrated into farm level management planning within national or regional agri-environment schemes.