

Combining tracers and landscape modelling to predict sources of sediments and phosphorus to waterways

Ck. Bundella

C. J. Wilson

P. J. Wallbrink

C. Martin

The Liverpool plains in the Namoi River basin, NSW, is one of the most productive agricultural regions in Australia. However sedimentation in the streams and rivers running through it has resulted in severe environmental degradation. Eutrophication is also a major associated issue, algal blooms persistently occur. The occurrence of these blooms is associated with excess available Phosphorus. This phosphorus is derived as either particle bound from erosion of diffuse sources or as runoff of fertiliser p from cultivated and pastureland areas. The three major erosion sources of particle bound P are: i) sheet erosion of the 40% land surface under cultivation, ii) sub-soil erosion from the significant number of channels and gullies that drain the region and iii) surface erosion from the pastureland and forested parts of the catchment. Fertilisers based on Nitrogen, P and K are used extensively in the catchment. The Bundella Ck catch-

terize not only fluxes of material from surface erosion, but also that from subsoil channel and gully erosion processes. We compare the results of sediment and P fluxes from the tracers and the topographic model and investigate the potential for applying the model to other parts of the landscape in which tracer data is not available.