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Potential for In-stream Phosphorus Contributions to Phosphorus Export from Running Turkey Creek Watershed

Surface water quality is impacted by both landscapes that generate runoff and the soils or sediments contacted within the drainage network. Depending on the quality and condition of the soils/sediments within the drainage network, water quality could be either improved or degraded in transport. Soil P status is an indicator of potential for soils to improve or degrade water quality with respect to nutrient loads. For this study we evaluated the P status of soils and sediments in fields and the stream network of an agricultural watershed in central Kansas. Results show that depositional sediments from a side-bar had higher labile P concentrations than soils from stream banks, stream beds, or upland fields. The side-bar sediments also had higher EPC0 (equilibrium P concentration at zero net P sorption) and greater P release rates, indications that these sediments would maintain higher dissolved P concentrations in the stream water than would other sediments and soils. These preliminary results indicate that the depositional features in streams could potentially be a substantial source of P. Phosphorus desorption or sediment resuspension and transport from these features would have a deleterious effect on water quality.

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