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Developing a Water Quality Risk Map for Targeting Resources in South Dakota

Kurtis D. Reitsma, G. Reicks, D. E. Clay, C. G. Carlson and J. Gilbertson

Abstract Text:

To produce measurable improvement in water quality it has been proposed that educational activities need to be targeted at producers not following best management practices in high risk areas. The purpose of this paper is to provide a step-by-step guidance on an approach for identifying priority areas for targeting educational activities. A model for identifying areas of risk was developed using a step-wise method. Initially, a 6.4 kilometer (2 mile) corridor was delineated around the Big Sioux River and major tributaries. Field scale land use (cropland/pasture) data was provided by USDA Farm Services Agency (USDA-FSA). High priority cropland areas were identified by estimating soil loss using the Revised Universal Soil Loss Equation (RUSLE 2). The analysis assumed that the rotation was corn following soybean with a residue cover of $\approx 30\%$ ($C = 0.145$); contributing practice factor was ignored ($P = 1$). Slope length (LS) values and soil erodibility factors (K) for each map unit were estimated considering the dominate series. High priority cropland areas had an estimated soil loss greater than $13.5 \text{ tonm}^*\text{Ha}^{-1}$ ($6 \text{ tonus}^*\text{acre}^{-1}$). Pasture land within 30 meters of the Big Sioux River and tributaries were also considered high priority areas. Maps identified high priority areas where best management practices should be followed. This approach reduced the area targeted for educational efforts by approximately 60%. Targeted areas will be further reduced by identifying specific management practices in high priority areas.

Impact Statement:

Results from on-going educational activities in high priority areas will be discussed.