

MODELING THE INFLUENCE OF CLIMATE AND MANAGEMENT PRACTICES ON WATER QUALITY IN GOODWATER CREEK EXPERIMENTAL WATERSHED

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ABSTRACT

The objective of this study was to determine relationships among weather, runoff, water quality, and best management practice (BMP) implementation in reducing atrazine losses in the 7,250-ha Goodwater Creek Experimental Watershed in NE Missouri's Audrain and Boone Counties. Data were collected from 1993 through 2003. Regressions were conducted among water quality indicators, climatic variables, and the change in area protected by BMPs. Results showed significant decreases in atrazine concentrations for June and the combined months of April, May, and June. Covariate analysis of the effect of BMP protected area on atrazine concentrations showed that the time period analyzed was important. Inputs were developed for the Soil and Water Assessment Tool (SWAT) program. The SWAT model was able to simulate decreased atrazine concentrations with 4.5% of the watershed protected by grassed waterways. Changes in the amount of land in conventional, conservation, and no-till tillage systems also affected the simulated atrazine concentrations.