

Water Quality and Conservation Practices in the Iowa River's South Fork Watershed

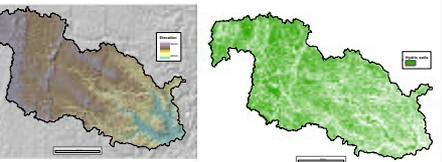
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Objective: To determine how water quality is affected by agricultural practices on the scale of a large watershed.



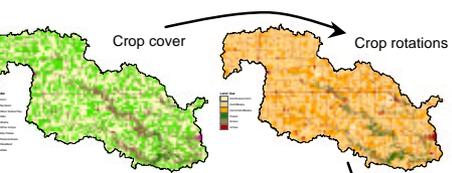
Setting: North-central Iowa
 Glacial terrain with hydric soils occupying potholes



Artificial drainage and swine confinements (CAFOs) prominent

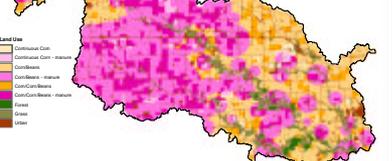


Man-bean rotations and manure applications: Rotations determined by overlaying successive years of Agric. Statistics Serv. crop cover data

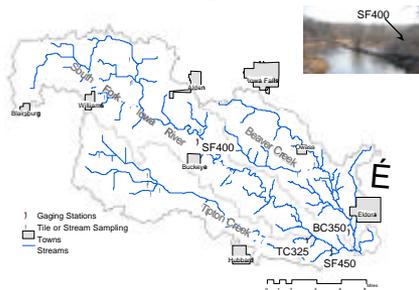


CAFO coverage (not shown)

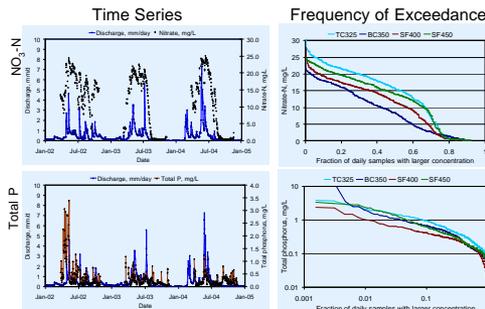
Estimated manure application areas



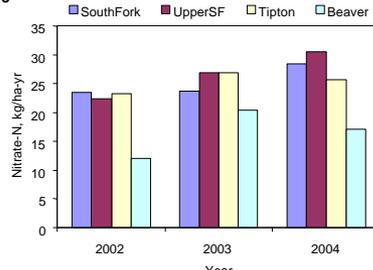
Water quality monitoring on 3 tributaries



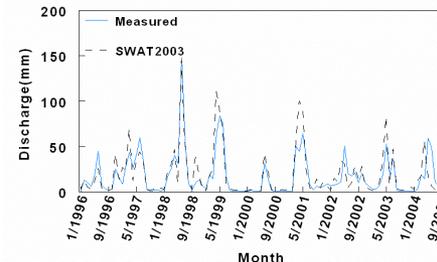
Nutrient data summary (2002-2004)



NO₃-N loads

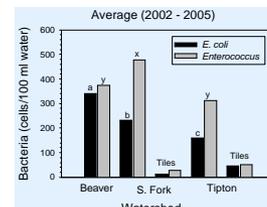
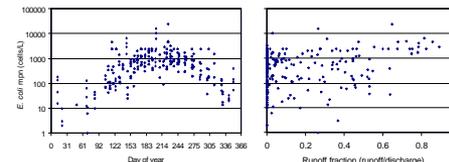


Hydrologic calibration of SWAT at SF450



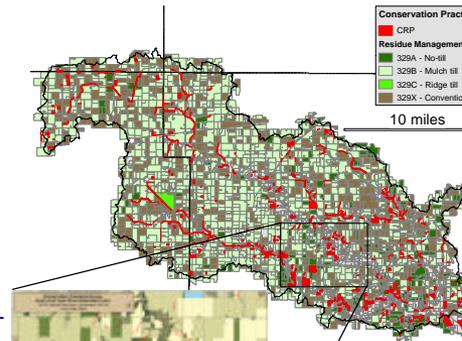
E. coli and Enterococcus data summary

Variation in *E. coli* populations is influenced by variations of season (temperature) and hydrology (surface runoff).

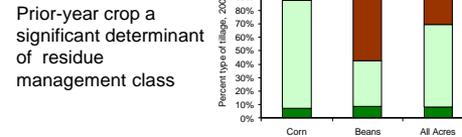


Differences in stream water bacterial populations were found between tributaries. Beaver Creek populations are equivalent or greater than Tipton Creek suggesting sources other than swine manure are important. Tile water populations were much lower than stream water.

Survey of Conservation Practices



Based on records search and field survey conducted by NRCS, May 2005



Prior-year crop a significant determinant of residue management class

Conclusion
 Priority needs for future improvements to conservation systems include: a) Nutrient management practices that reduce N leaching; b) Wetlands to remove nitrate from drainage water; and c) Options to better manage residue following soybeans, particularly when applying manure. Hydrologic calibration of SWAT for the watershed is completed.

