

**IMPACTS OF CONSERVATION PRACTICES ON RUNOFF FROM PRODUCTION SIZED COTTON
FIELDS USING EDGE-OF-FIELD MONITORING**

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Abstract

Nonpoint source pollution accounts for 48% of impaired surface waters due to agricultural activities, according to the EPA. Sediments are the leading contaminate followed by nitrogen and phosphorus. The Mississippi River Basin Healthy Watersheds Initiative began in 2010 using edge-of-field water monitoring for sediment and nutrient levels year round. The objectives of this research was to monitor the quality and quantity of the runoff from production sized cotton fields resulting from conservation practices implemented in two priority watersheds in Northeastern Arkansas. Water monitoring equipment was deployed in order to measure runoff, collect flow weighted samples for laboratory analysis of sediment, nitrogen and phosphorus and allow for remote access via cellular connections. Fields were paired with one control using conventional farming techniques and the other having one or more conservation practices installed. Conservation practices included grass strips, cover crops, zone and nutrient management, and irrigation planning. Data shows the mean phosphorus is 0.78 mg/L, nitrate 0.72 mg/L, total nitrate 0.89 mg/L, total phosphorus 0.65 mg/L, and suspended sediment concentration 10.00 mg/L. The mean loss of SSC during precipitation events 14.32 mg/L, and mean for irrigation 0.87 mg/L; showing an overall loss greater during precipitation events versus irrigation. Timing of tilling fields, planting crops, irrigation methods, and crop type along with the soil variety available for planting may affect loss of valuable top soil and nutrients into the waterways and will be further studied.