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LOAD ESTIMATIONS USING LOADEST WITHIN AGRICULTURALLY DOMINATED WATERSHEDS ACROSS THE CONTINENTAL UNITED STATES

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ABSTRACT Row crop agriculture can lead to pollution of streams and rivers through multiple pathways. These effects can be severe, often resulting in eutrophication, increased turbidity, and degradation of benthic habitats. Changes in agricultural management practices have occurred over the years in an attempt to mitigate some of these effects. In order to evaluate the impacts cropping and tillage practices can have on pollutant loading rates, annual mean loads and concentrations were estimated at over 90 sites within agriculturally dominated watersheds (<5% urban land use) across the continental US. Each site was classified according to four major cropping practices including corn, soybeans, cotton, and wheat as well as five major management practices including ridge tillage, mulch tillage, reduced tillage, conventional tillage, and no tillage. To assess pollutant loading at each of the sites, LOADEST, a FORTRAN program developed by the United States Geological Survey (USGS) was used to produce nutrient, sediment, and pesticide load and concentration estimations. Calibration and streamflow data for the program was obtained from the USGS North American Water Quality Assessment (NAWQA) between the years 1992 and 2006. A time series analysis was performed to establish any loading or concentration trends for each of the four cropping practices and five management practices.

Keywords: LOADEST, Cropping practices, Management practices, Pollutant loading.