

SEDIMENT AND NUTRIENT FILTERING EFFICIENCY OF NEWLY ESTABLISHED MULTI-SPECIES RIPARIAN BUFFERS IN DIFFERENT AGRICULTURAL CROPPING SYSTEMS

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The following research project is conducting simulations to determine the effectiveness of newly established multi-species riparian buffers to filter the three most common elements associated with agricultural production land uses (sediment, nitrogen, & phosphors). Agricultural tillage patterns are linked to the aquatic ecosystems they border through the riparian buffer. Conservation practices have been indicated as the key to reducing the impact that land use has on the aquatic ecosystems. In efforts to address the issue conservation agencies have been promoting and utilizing riparian buffers as the preferred best management practice (BMP). The removal of land from production and the investment to install and maintain a riparian buffer system is a great sacrifice placed upon the landowner whom repeatedly asks how effective is the BMP at addressing the issue. Better baseline knowledge is needed as to the effectiveness of these buffer systems to filter out sediments, and nutrients (N, P) derived from agricultural production land uses. As important we don't fully understand the physiological process the buffers travel through to become filters. We don't know when they start to filter, when they reach their peak filtering ability, and when they reach their carrying capacity. Through this research we have established 12 blocks (each containing 4 separate plots) of buffers representing two slope percentages (<6% and >6%) that are integrated with four agricultural land use tillage practices (no till, mulch till, clean till, and organic tillage practices). The buffers were designed and constructed to meet NRCS conservation standards for herbaceous cover buffers (practice code 390) and for riparian forest buffers (practice code 391) using real life dimensions in that our buffers are 50 to 55 feet in width. The herbaceous cover utilized is 4C warm season grasses, and the woody species were chosen as representative species within the watershed research area. This knowledge gained from this research will aid in assigning areas of concern or areas in need of buffers to reduce the land use impacts on the aquatic ecosystems. The data will also serve as a powerful tool to promote the BMP to landowners as a vital component within their comprehensive management system.

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