RIPE
Rural Investment to Protect our Environment

Methodology and Sources for Riparian Herbaceous covers

Ecosystem Service	$/Acre/Year	Citation
GHG Mitigation (at $51/tonne CO2e)	$51	The USDA COMET-Planner tool demonstrates the average national level of GHG sequestration from riparian herbaceous covers equals 1 tonne CO2e per acre. At a value of $51 per tonne CO2e, the public benefit is $51 per acre.
Nutrient Retention	$31	Hui Xu, May Wu, and Miae Ha (2018). Recognizing economic value in multifunctional buffers in the lower Mississippi river basin in *Biofuels, Bioproducts and Biorefining,* published by Society of Chemical Industry and John Wiley & Sons, Ltd. This study values the nutrient retention from switchgrass buffers at $69 per ha, which is $27.4 per acre. This is $31 in 2021 dollars.
Water Quality - Sediment Reduction	$48	Herbaceous buffers reduced sediment loss by 0.8 tons per acre in the Mississippi Delta (1). Forest buffers provide a value of $12 per acre by reducing sediment by .2 tons (2). Therefore, the value of sediment reduction totals around $60 per ton. Multiplied by .8 tons, the value for herbaceous buffers totals $48 per ton. Sources: 1) Rempel, A. & Buckely, M. "The Economic Value of Riparian Buffers in the Delaware River Basin." Delaware Riverkeeper North. 2018. 2) Helmers, M.J. . Buffers and Vegetative Filter Strips. EPA. 2006.
Water Quality (Reduced Nutrient Transport)	$711	According to the report "The Economic Value of Riparian Buffers in the Delaware River Basin,"(2018) it costs $4-$58 ($5-$65 in 2022 dollars) to treat a pound of nitrogen in water. 20 to 40 pounds of nitrogen per acre per year move into shallow groundwater sources under agricultural fields, according to NC State. Grass riparian buffers reduce nitrate in water by an average of 53%, or 10-21 pounds per acre per year, according to the EPA report "Riparian Buffer Width, Vegetative Cover, and Nitrogen Removal Effectiveness" (Mayer et al., 2005). This results in a saved value of $44 to $1,378 per acre foot, or a mid-point of $711 per acre per year.
Flood Mitigation (wetlands)	$789	Rempel, A. & Buckely, M. "The Economic Value of Riparian Buffers in the Delaware River Basin." Delaware Riverkeeper North. 2018. This report demonstrates that wetlands, which can constitute riparian herbaceous buffers, provide flood attenuation benefits valued at $732 in 2017 dollars, or $845 in 2022 dollars.

Habitat Connectivity (pollinators)	$152	Rempel, A. & Buckely, M. "The Economic Value of Riparian Buffers in the Delaware River Basin." Delaware Riverkeeper North. 2018. This report demonstrates that protecting and restoring habitat for native pollinators can boost agricultural earnings on New Jersey tomato farms by $30 to $222 per acre in 2017 dollars. Averaged and converted to 2022 dollars, these values equal $152 per acre.
Total	**$1,782**	

For more information, visit www.RIPEroadmap.org or contact Clara Greider at CGreider@RIPEroadmap.org.