

Evaluation of Forage Grasses for Use in Riparian Buffer Systems



Grass buffer systems can reduce the impact of non-point source pollution by slowing runoff velocity, trapping sediment, promoting pesticide degradation, and removing nutrients. However, high herbicide concentrations in runoff water and shade from trees may reduce the effectiveness of grasses in these riparian buffer systems. Scientists at the Cropping Systems & Water Quality Research Unit and the University of Missouri conducted greenhouse and field studies to evaluate the shade and herbicide tolerance of five grass species as well as to evaluate their ability to reduce herbicide and nutrient transport to shallow groundwater.

Based on these studies, switchgrass, tall fescue, and smooth brome grass showed the most potential for use in tree-shrub-grass riparian buffer systems. These species showed the best overall ability to enhance atrazine degradation in soils and reduce contamination of groundwater while maintaining their vigor when partially shaded and exposed to herbicides. These results are important for designing grass and riparian buffer systems that effectively reduce herbicide and nutrient non-point source contamination associated with crop production.

Lin, C.H., Lerch, R.N., Garrett, H.E., and George, M.F. Incorporating forage grasses in riparian buffers for bioremediation of atrazine, isoxaflutole, and nitrate in Missouri. *Agroforestry Systems*. 63: 91-99. 2004.
<http://www.ars.usda.gov/sp2UserFiles/Place/36221500/cswq-0003-128242.pdf>

Lin, C. H., Lerch, R. N., Garrett, H. E., and George, M. F. Bioremediation of atrazine-contaminated soil by forage grasses: Transformation, uptake, and detoxification. *J. Environ. Qual.* 37:196-206. 2008.
<http://www.ars.usda.gov/sp2UserFiles/Place/36221500/cswq-0383-lin.pdf>

Contact the author: Bob Lerch, bob.lerch@ars.usda.gov, 573-882-1114x312