Public Abstract

First Name:Bodh

Middle Name:Raj

Last Name:Paudel

Adviser's First Name:Ranjith

Adviser's Last Name:Udawatta

Co-Adviser's First Name:Stephen

Co-Adviser's Last Name:Anderson

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Title:SOIL QUALITY AS AFFECTED BY AGROFORESTRY AND GRASS BUFFERS IN GRAZED PASTURE AND ROW CROP SYSTEMS

Public concerns about environmental quality, such as soil and water quality as well as crop productivity and human health, have received increasing attention in recent years. Incorporation of trees and establishment of grass buffers within agroecosystems are management practices believed to enhance soil quality. Among soil quality parameters, soil enzyme activities and water stable aggregates have been identified as soil quality indicators that could be used to evaluate early responses to soil management. However, few studies exist that compare these parameters among buffers, grazing pastures, and row crop systems. The objective of this study was to examine differences in selected soil quality indicators among four management treatments: grazed pasture, agroforestry buffer, grass buffer, and row crop. The results indicate that water stable aggregates were highest in grass buffer in both years. The Î²-glucosidase activity was greatest in grass buffer in first year while it was greater in agroforestry buffers in second year. Most soil quality indicators were not different between grazed pasture and buffer treatments but were significantly greater compared to row crop. The greater accumulation of organic matter and less physical soil disturbance causes better soil aggregation and better soil quality. The nature of soil quality indicators observed in this study suggests that perennial vegetation provides favorable conditions to improve soil quality compared to row crop management. The study suggests that establishment of perennial vegetative buffers with trees and grass in grazed pasture watersheds enhance soil and environmental quality.