LONG-TERM CHANGES IN THE ACIDITY OF A DEKALB FOREST SOIL IN THE MID-REGION OF THE SUSQUEHANNA RIVER WATERSHED

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Forest soil acidification has been reported to result in reduced forest productivity and forest decline. Soil acidification and forest decline may trigger changes in nutrient cycling in forest ecosystems with important consequences for drainage water chemistry and aquatic biota. In an attempt to determine whether or not Pennsylvania forest soils are becoming more acidic, soil samples were collected at six forested sites in Clinton County, Pennsylvania in 1993. Soil chemistry data obtained through two previous studies conducted in 1957 and 1961 were available for each of these sites. Soils were analyzed for pH and exchangeable calcium and magnesium, and results compared to the results obtained in the earlier studies. Soil analysis methods were evaluated to ensure that values obtained in the 1993 sampling were comparable to those of the original investigators. Results indicated significant decreases in pH and exchangeable Mg content at all sites. Exchangeable Ca decreased on the undisturbed sites and increased on the disturbed sites. Significant acidification of these soils has taken place over the past 32-36 years. Comparisons of disturbed and undisturbed sites indicated that at least part of the observed increase in acidification was the result of acid deposition.

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