Reducing processes in soils from Lesný potok watershed were observed in laboratory experiments aimed to discover their phosphorus release influence as the limiting makronutrient for all organisms. Soil samples were obtained from B horizon, from the zones with same geological subsoil and vegetation, they differed only in stream distance and thus in various flooding behaviour. In one month lasting reducing experiments with different conditions (light and temperature) concetration changes of Fe, Fe^{2+}, Al, Mn, P and activity of soil microorganisms were observed. It was prooven, that microorganisms activity have crucial effect on reduction processes and also amount of microorganism activity was the highest in the zone that was seasonally flooded. It turned out that reduction processes in acid forest soil from Lesný potok have no contribute on phosphorus release to soil solution.