



The fire effect on Cerrado: Analysis of the erosive process associated with native vegetation by the use of experimental plots

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In Brazil vast areas of vegetation are devastated each year by the use of fire that recorded more than 200,000 hotspots annually. In this context, the state of Minas Gerais appears first in the number of fires and burned areas due to its long stretch of reforested area in an environment where a prolonged dry season contributes to the occurrence and spread of fire in the Cerrado vegetation. This research consists of a comparative study through the controlled application of fire under different conditions of natural vegetation of the focusing on the change in rates of runoff, sediment production and vegetation density in order to evaluate the influence of burning related to soil erosion. The area of study is located in Uberlândia at an altitude of 850 meters above sea level and in the respective geographic coordinates 18°56'56"S and 48°12'21"W that composes the watershed of Glória stream. The climate is characterized by dry winters and rainy summer. On this area five experimental plots was established from the specific characteristic of its vegetation cover, slope and drainage, thus differentiated: well drained soil with the presence of a dense grass (plot A), well drained soil with the presence of shrub and grasses (plot B), poorly drained with a non-dense grass (plot C), well drained soil with grass (plot D), and well drained with grasses and tree cover(plot E). The plots have 1m² that is connected with a trough collector that concentrate the water flow generated by runoff with a 30 liter gallon that was weekly measured. The data relating to runoff and sediment yield were obtained from the collection of water derived from water stored in gallons, in which first was homogenized, measured quantity and collected 1 liter of water to be filtrated in the laboratory. The analysis method of vegetation density was performed based on the methodology proposed by Pinese Junior, Cruz and Rodrigues (2008), using the software ENVI 4.3 to interpret and quantify the image differentiating vegetation and bare soil. Sediment yield in the plot E occurs in greater quantities when compared to the other plots because of the absence of plant protection. About vegetation density, the grass in plots A and C, was more sensitive to climate change due to the fact its roots use of stored water in the superficial soil layer, with variation to 65%. The plot B was more stable, ranging 24%. Plots E showed large variations, with 58%, and their percentage of vegetation cover remained the lowest compared with the other plots, which explains their greater runoff amount. We conclude that the action of fire on the shrub is minimal compared to other types of vegetation, because their values showed less erosive index, but the arboreal vegetation suffered more erosive degradation after firing.