

Recovery of the fine fuel of the herbaceous layer of an open savanna after a fire at the onset of the rainy season

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ABSTRACT- Fire is one of the determinants of Cerrado's vegetation. Before the human presence in the region, natural fires occurred mostly at the transition from the dry to the rainy seasons. Nowadays, anthropic fires occur mostly at the dry season. Cerrado's fires are fast surface fires consuming ~94% of the fine fuel (all biomass, green or dry with a diameter <0.5 cm) of the herbaceous layer. The objective of this study was to evaluate the recovery of the fine fuel after a prescribed burning that simulates a natural fire. The experiment took place in an area of open savanna, 35 km Southeast of Brasília (DF), burned one year before our experiment. In this area, eight plots (90 x 30 m) were selected. In September 2018, at the onset of the rainy season (53.2 mm before the burn), four plots were independently burned, and the remaining were left as control. In each plot, monthly, five samples (0.25 m²) of aboveground biomass were randomly harvested. The fuel was sorted in dicots (D), graminoids (G) and palm leaves (P). The dry mass was estimated after drying (~ 60°C) for 48h. The data was analyzed using one-way ANOVA with Tukey post-hoc test to compare G, D and total mass of fine fuel (T) among months of recovery and between treatments. For P, Kruskal-Wallis test followed by Dunn (p<0,05) were used. Before the fire, there was no significant difference between T for the burned plots (T=0.49±0.16 kg.m⁻²; G=0.20±0.07 kg.m⁻²; D=0.20±0.07 kg.m⁻²; P=0.09±0.06 kg.m⁻²) and control plots (T=0.33±0.03 kg.m⁻²; G=0.13±0.01 kg.m⁻²; D=0.12±0.04 kg.m⁻²; P=0.07±0.06 kg.m⁻²). Fire efficiency was 92±5%. Two months after fire, T in the burned plots was similar to the pre-fire values, as were G, D and P. These values were the same up to February 2019, suggesting a faster recovery of the fine fuel at rainy season fires than the reported in the literature for dry season burns. In February, T increased 1.4-fold in control plots in relation to September 2018. The difference in T is attributed to the increase in G. (FAPDF/0193.001387/2016; CNPq/442722/2018-4; Comando da Área Alfa (DF) da Marinha do Brasil)

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