

## The Importance of Fruit Trees for Prescribed Burning in a South American Savanna

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**Abstract :** The Cerrado biome is the most biodiverse savanna on the planet. Located in central Brazil, its preservation is seriously threatened by the advance of intensive agriculture and livestock. Conservation Units and Indigenous Lands are increasingly isolated and subject to mega wildfires. Among the characteristics of this savanna, we highlight the high rate of primary biomass production and the reduced occurrence of large grazing animals. In this biome, the predominant fauna is more dependent on the fruits produced by the dicotyledonous species in relation to other tropical savannas. Fire is a key element in the balance between mono and dicotyledons or between the arboreal and herbaceous strata. Therefore, applying fire regimes that maintain the balance between these strata without harming fruit production is essential in the conservation strategies of Cerrado's biodiversity. Recently, Integrated Fire Management has started to be implemented in Brazilian protected areas. As a result, management with prescribed burns has increasingly replaced strategies based on fire exclusion, which in practice have resulted in large wildfires, with highly negative impacts on fruit and fauna production. In the Indigenous Lands, these fires were carried out respecting traditional knowledge. The indigenous people showed great concern about the effects of fire on fruit plants and important animals. They recommended that the burns be carried out between April and May, as it would result in a greater production of edible fruits ("fruiting burning"). In other tropical savannas in the southern hemisphere, the preferential period tends to be later, in the middle of the dry season, when the grasses are dormant (June to August). However, in the Cerrado, this late period coincides with the flowering and sprouting of several important fruit species. To verify the best burning season, the present work evaluated the effects of fire on flowering and fruit production of the *Byrsonima* sp., *Mouriri* pusa, *Caryocar brasiliense*, *Anacardium occidentale*, *Pouteria ramiflora*, *Hancornia speciosa*, *Byrsonima verbascifolia*, *Anacardium humille* and *Talisia subalbans*. The evaluations were carried out in the field, covering 31 Indigenous Lands that cover 104,241.18 Km<sup>2</sup>, where 3,386 prescribed burns were carried out between 2015 and 2018. The burning periods were divided into early (carried out during the rainy season), modal or "fruiting" (carried out during the transition between seasons) and late (carried out in the middle of the dry season, when the grasses are dormant). The results corroborate the traditional knowledge, demonstrating that the modal burns result in higher rates of reproduction and fruit production. Late burns showed intermediate results, followed by early burns. We conclude that management strategies based mainly on forage production, which are usually applied in savannas populated by grazing ungulates, may not be the best management strategy for South American savannas. The effects of fire on fruit plants, which have a particular phenological synchronization with the fauna cycle, also need to be observed during the prescription of burns.

**Keywords :** cerrado biome, fire regimes, native fruits, prescribed burns

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