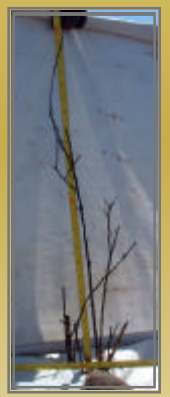
Aim

The objectives of this study were to explore how fires affect *Balanites aegyptiaca* and if fire had any connection to why there is no visible re-growth.

Material and Method

The study was divided into three seasons (before fire, two weeks after and two months after) and three treatments (early fire (June), late fire (October) and control). 24 transects, 1000 meters long, were used and a total of 275 trees were selected in an area around them. Grass was cut within a quadrate (25*50 cm) next to the saplings for estimating the burnable biomass and fire intensity. All tops longer than two cm were counted and divided into three categories, green undamaged, green damage and brown.



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The effect of fire on Balanite tree in Masai Mara National Reserve, Kenya.

Introduction

Much of Africa's savannah has shifted between woodland and grassland during the last century and the dynamics of the area has been influenced by factors such as fire, humans and grass-eater[1].

Fire has for thousands of years been a natural part of the savannah, origin from both natural causes and humans. Settlers have used fire to clear land for pastoral land and for keeping wild animals out of the areas close to their villages[2]. Many National Parks uses fire for keeping grassland savannahs open as well as for improving grass quality[3].

The extension of the damages caused by fire is determined by factors such as fire intensity, soil[4] and plant moisture, weather and wind speed[5]. Fire management, herbivore pressure together with a low rate of natural regeneration is believed to be one reason for why the Balanites trees (*Balanites aegyptiaca)* have declined in numbers[6].

Results

Tops

Before fire (season one) 100 % of the saplings had some green parts, compared to only 37.9 % in season two. The proportion of brown tops was highest during late fire treatment, season two, one week after the fire.
A week after the fire, the first green newly emerged tops could be observed on the burnt saplings. 11.5 % of all the saplings burnt in areas of late fire treatment had five or more tops a week after burning. (Figure 1)

Grass

Most biomass was found in areas that had not been burned for longer time, late fire season one and in control areas. After fire the biomass is accumulated with time and during season three there was no longer any difference in amount of biomass. (Figure 2)

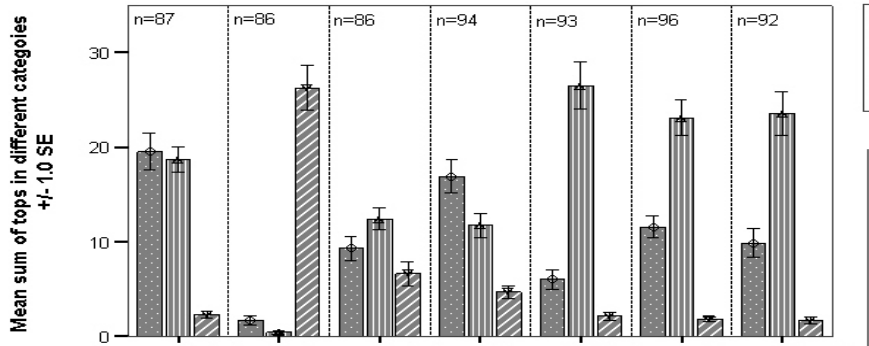

Figure 1. Mean sum of tops during different seasons and fire treatments.

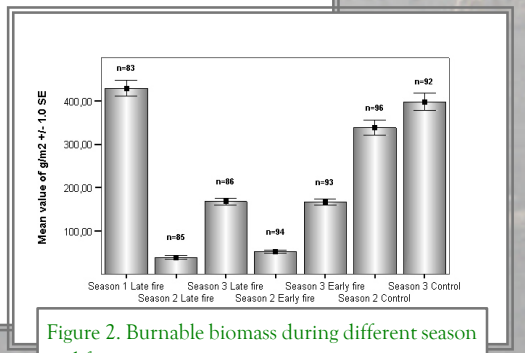

Figure 2. Burnable biomass during different season and fire treatments.

Discussion

The negative effect of fire on grass became obvious when burnable grass biomass were compared before and after fire. More fuel e.g. burnable biomass, leads to higher fire intensity and with repeated hot fire the damages becomes more severe than with cold fire treatments[7]. Due to fire there were almost exclusively brown tops on the saplings during season two.

Conclusions

Obviously, but still, plants and grass are negatively affected by fire and a higher fuel load gives a higher degree of damages.