HORSES FOR FOREST FIRE PREVENTION

Final degree project - June 2023

Carlota Calvet Molina

FACULTAT DE VETERINÀRIA

UAB Universitat Autònoma de Barcelona

INTRODUCTION:

Forest fires are a natural disaster that have seen an increasement in recent decades due to the progression of continuous wooded areas. This situation has clearly highlighted the need to develop new methods to prevent these fires. One of these methods is underbrush grazing by domestic herbivores, with the aim of reducing fuel mass through vegetation consumption and trampling.

OBJECTIVE:

Assessing the impact of horse presence in the understory to determine if this effect could be a valuable tool for forest fire prevention.

MATERIALS & METHODS:

Figure 1: The study area.

Figure 2: Measuring the diameter of a plant

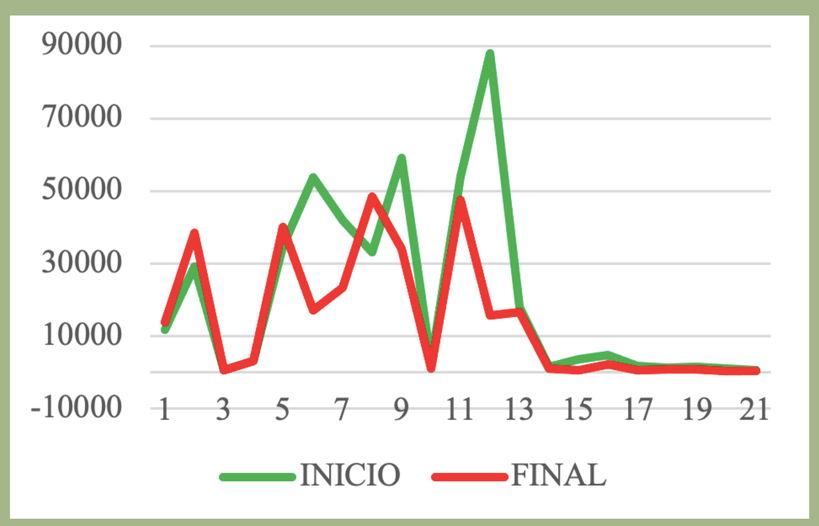
Figure 3: Microhistological preparation

Figure 4: O. europea's epidermis

'Forest Horses' is a non-profit organization aimed at carrying out forest restoration projects. They have allowed us to work with their 10 horses for the completion of this study. The study area is located in Olesa de Bonesvalls (Alt Penedès). The experimental design is based on the performance of three distinct activities: (a) data collection of height and diameter of *O. europea* and *P. lentiscus* to study the variation in their phytovolume and coverage, (b) the establishment of 5 transects, each 20 meters long, and the identification of their vegetation cover to study its variation & (c) the collection of fecal samples to compare the possible change in dietary composition through a microhistological study.

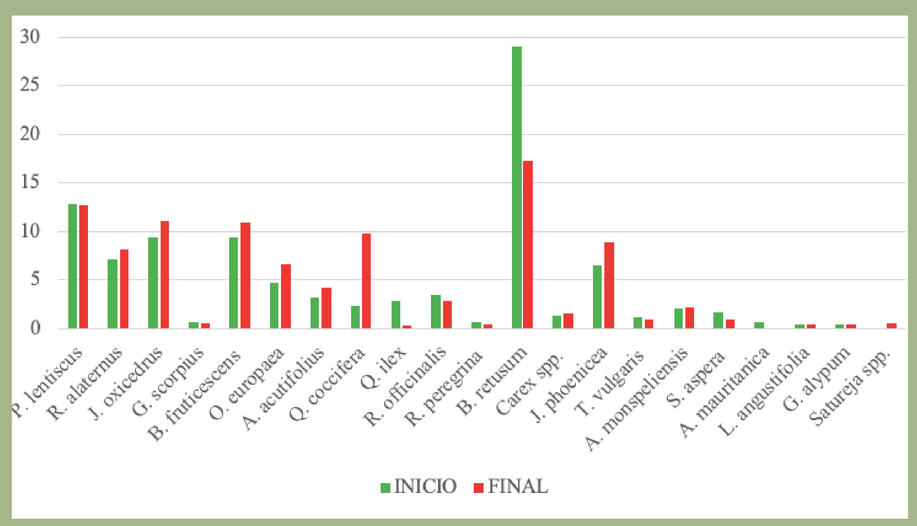
RESULTS:

Graphic 1: Variation on *O. europea*'s coverage



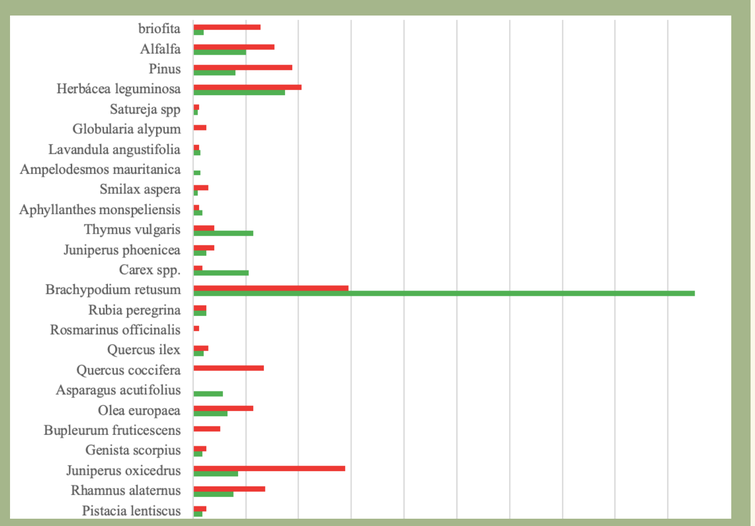
The variation in coverage for *O. europea* has been significant. We obtained the same significant result for its phytovolume, while for *P. lentiscus*, the variations weren't significant. This confirms the preference of horses for *O. europea*.

Graphic 2: The average variation in coverage across the 5 transects.



The decrease of *B. retusum* is noticeable in all transects, while for woody species there have been no remarkable changes.

Graphic 3: Variation in fecal composition



Graminae species (fine fuel) have reduced their presence in the final composition, likely due to their decreased coverage. As a result, horses have consumed a greater quantity of woody species compared to the beginning.

CONCLUSIONS:

Horses' work in the understory for forest fire prevention needs to be combined with another animal's work, such as the goat, to compensate. Horses will affect the fine fuel, while goats will take care of the robust fuel.