Forest pasture with Ripollesa sheep breed for the prevention of forest fires

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Introduction

A great extension of forests can be found in Catalonia and most of this area is private. Currently there is less incidence of fires but the fact that farmers are abandoning forests implies that fires today have a broader extension.

The objective of this study is to analyze the role of extensive Ripollesa sheep farming in fire prevention by reducing flammable vegetation in Mediterranean forests.

Materials and methods

The study took place in a private forest of Pinus halepensis and Quercus ilex in Olives, Vilademuls (Girona). Ten ewes and one ram of Ripollesa breed sheep were used for pasture in this area.

Gathering the samples

Three transects (Fig. 3) were defined across the area to study the vegetation of this forest once every season (autumn, winter, and spring).

Sheep faeces were collected from four different animals twice each season (Fig. 2)

The processing of the samples

A microhistologic analysis of the plants and faeces was carried out following the model Stewart D.R.M., 1967.

The microscope was used to observe the samples. Statistical analysis

Descriptive statistic, ANOVA, Fisher test, Spearman correlation and ilvev index were used.

Results and discussion

Table 1: Comparison of vegetation with diet

<table>
<thead>
<tr>
<th>SEASON</th>
<th>Rho</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTUMN</td>
<td>0.739</td>
<td>0.0013</td>
</tr>
<tr>
<td>WINTER</td>
<td>0.615</td>
<td>0.0073</td>
</tr>
<tr>
<td>SPRING</td>
<td>0.495</td>
<td>0.0309</td>
</tr>
</tbody>
</table>

Figure 1: The red arrow shows the area of the study. Pinus halepensis forests are shown in green and the forests of Pinus halepensis and Quercus ilex are shown in orange. Source: Beltrán et al., 2011

Figure 2: The long arrow shows the days of sampling plants. The short arrow shows the days of faeces collection.

Table 1 shows that Quercus ilex, herbaceous grasses and Smilax aspera are the most abundant plants among the vegetation. Sheep diet is generally based on Quercus ilex and herbaceous grasses whereas Smilax aspera—which is not related with forest fires—is hardly ever consumed by sheep (Graphics 2).

Other flammable species such as Pinus halepensis, Rosmarinus officinalis and Ulex paraviflorus are infrequent among vegetation but also take little part in sheep diet.

Spring is the season when there is more vegetal diversity. Therefore, we can observe lower correlation between diet and vegetation (table 1) because sheep increase plant selection.

Conclusions

Sheep are animals that have preferences in their diet, however, they easily adjust to the availability of vegetation.

Therefore Ripollesa sheep breed is a viable option as a method of reducing the fuel load in Mediterranean forests of Pinus halepensis and Quercus ilex.

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References
