

Effects on natural regeneration of woodland in a dehesa system grazed by Avileña-Negra Iberica breed

Rodríguez R., López-Carrasco C., Zuzuarregui J.

in

Etienne M. (ed.).
Dynamics and sustainability of Mediterranean pastoral systems

Zaragoza : CIHEAM
Cahiers Options Méditerranéennes; n. 39

1999
pages 257-259

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=99600083>

To cite this article / Pour citer cet article

Rodríguez R., López-Carrasco C., Zuzuarregui J. **Effects on natural regeneration of woodland in a dehesa system grazed by Avileña-Negra Iberica breed.** In : Etienne M. (ed.). *Dynamics and sustainability of Mediterranean pastoral systems* . Zaragoza : CIHEAM, 1999. p. 257-259 (Cahiers Options Méditerranéennes; n. 39)



<http://www.ciheam.org/>
<http://om.ciheam.org/>

Effects on natural regeneration of woodland in a dehesa system grazed by Avileña-Negra Iberica breed

R. Rodríguez, C. López-Carrasco and J. Zuzuarregui
CIA "Dehesón del Encinar", 45560 Oropesa (Toledo), Spain

SUMMARY - Effects on concentrated calving against continuous calving and different supplementation levels on cattle in a dehesa system have been studied. In these experimental conditions we considered it necessary to evaluate grazing effects on natural regeneration of holm oaks (*Quercus rotundifolia*) and cork oaks (*Quercus suber*).

Key words: Dehesa system, regeneration woodland, overgrazing, no transhumance exploitation, cattle.

RESUME - "Effets sur la régénération naturelle de la forêt dans un système type Dehesa pâturé par la race Ibérique Avileña-negra". On a étudié les effets de la mise bas concentrée face à la mise bas continue et les différents niveaux du complément de l'alimentation dans un troupeau bovin à viande dans un système d'exploitation de dehesa. Sous ces conditions expérimentales nous considérons nécessaire d'évaluer les effets du pâturage sur la régénération naturelle des chênes-verts (*Quercus rotundifolia*) et des chênes-lièges (*Quercus suber*).

Mots-clés : Dehesa, régénération du futaie, surpâturage, exploitation sédentaire, bovin.

Introduction

For five years, management of cattle (Avileña-Negra Iberica breed) in a dehesa system has been studied. Trials were conducted in CIA "Dehesón del Encinar", financed by National Institute of Agricultural Research and Junta de Comunidades of Castilla-La Mancha under the project entitled: "Management system of Avileño cattle in dehesas of Castilla-La Mancha".

In that study, our objectives were to determine the effects of *continuous or concentrated calving* on cattle exploitation, and the *adequate supplement level* to get optimal productive results. Experimental design and results are described in Rodríguez *et al.* (1996).

Under these conditions, we thought that evaluating grazing impact on natural regeneration of holm oaks and cork oaks could be interesting because visual evaluation suggested that too heavy an exploitation has been maintained on the trees.

Materials and methods

An experiment was conducted in a plot of 3.5 ha that had not been grazed before by cows for a long time (more than 10 years).

In summer 1995 potential trees affected by grazing were counted, based on visual evaluation obtained in adjacent areas under continuous grazing. The limit between potentially affected and not affected was established around 40-45 cm of perimeter.

The trees were counted and classified and we distinguished between species: holm oak and cork oak, and height: < 1 m; between 1 and 1.5 m; >1.5 m. Also, the perimeter of cork oaks higher than 1.5 m were measured at 1.0-1.2 m tall. Holm oaks were classified according to origin: seedling trees or coppice, in this case all stems with similar development were counted.

After counting them, the experimental area was continuously grazed with 0.3-0.4 cows ha⁻¹. In summer 1997, measurements were repeated.

Results and discussion

Relevant zootechnical indexes are described in Table 1. Good results were obtained under certain experimental conditions but two years after grazing the results related to trees were: the only cork oak in the plot (20 cm perimeter) was eliminated. 563 holm oaks were counted and only 209 were viable (37%). The number of individual holm oak was 101, 41 of which were viable (see Fig. 1).

Table 1. Synthesis of zootechnical results from 91/92 until 94/95

Variables	Lot I	Lot II	Lot III	Significance	
				I/II	II/III
Supplementation days	217.5	179.7	196.2	n.s.	n.s.
Supplementation cost	10,189	8,412	11,568	n.s.	n.s.
% fertility	96.6	92.6	77.7	n.s.	0.05
Calving period	364.5	369.4	367.8	n.s.	n.s.
Birth weight	37.5	35.7	36.1	n.s.	n.s.
Normalized weight (90 days)	109.1	99.6	103.5	0.01	n.s.
Daily live weight gained (birth-90 days)	0.796	0.708	0.734	0.01	n.s.
Normalized weight (180 days)	178.4	199.2	203.7	0.01	n.s.
Daily live weight gained (90-180 days)	0.777	1.106	1.113	0.001	n.s.
Daily live weight gained (birth-180 days)	0.783	0.907	0.931	0.001	n.s.
kg calf/cow at mating	157.3	175	162.6	n.s.	n.s.

Lot I: Continuous calvings, low supplementation
 Lot II: Concentrated calvings, low supplementation
 Lot III: Concentrated calvings, high supplementation

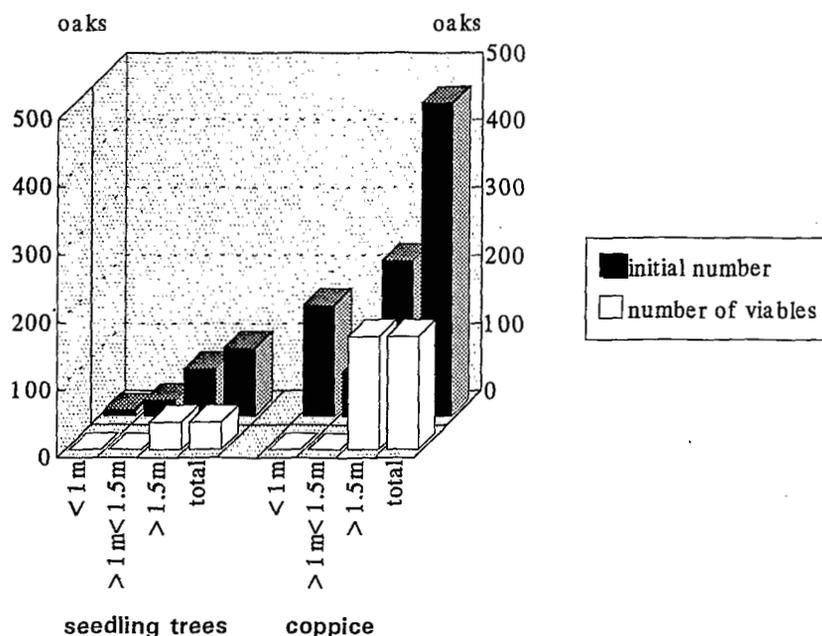


Fig. 1. Number of holm oaks variations after two years of continuous grazing in the area with natural regeneration.

It has been suggested that holm oak and cork oak can not survive under permanent grazing if their height is below 1.5 m. On the other hand, the chaparros taller than 1.5 m appear more viable than holm oaks originated of acorn fruits of a similar height (73% against 59% of viability).

According to an apparent palatability scale proposed by Meson and Montoya (1993), experimental area affected by grazing belonged to class V, indicating an excessive livestock number ha⁻¹ and poor feeding.

Most of the authors that have studied the role of trees in dehesa consider as very important the presence of these elements in the ecosystem (Jambrina *et al.*, 1983; Gutiérrez *et al.*, 1984; Montoya *et al.*, 1986; Bravo, 1991; Escudero *et al.*, 1993; Pulido *et al.*, 1994). However, nowadays the management of ruminants in extensive systems such as the dehesa (decrease of transhumance flocks, increase of number of animals ha⁻¹, etc.) prevents the natural regeneration of the trees and it is necessary to look for a new management system to allow natural and artificial regeneration and grazing in an economical way. If we could propose such a new system it would be possible to have access to economic assistance for reforestation offered by the new Forest Planning, because at the present time, this plan forbids long-time grazing in order to receive subsidies, (Beascochea, 1994). So we will contribute to resolve "the Mediterranean paradox" indicated by Allue, cited by Bravo (1991) and Meson and Montoya (1993), making compatible the management and the improvement of the pasture, and regeneration of the dehesa at the same time.

Conclusions

In a dehesa system, permanent grazing with Avileña cattle at 0.3-0.4 animals ha⁻¹, produced an intensive overgrazing on natural regeneration of holm oaks and cork oaks.

Only trees that are taller than cows can escape the damage of the animals and so they have possibilities to grow and persist in the future.

Inside the holm oak group, coppices appear more viable than seedling trees.

References

- Beascochea, E. (1994). Consideraciones sobre el Plan Forestal Nacional. *Quercus*, 104: 50.
- Bravo, F. (1991). Las Dehesas: Sistemas silvopastorales y agrosilvopastorales. *Agricultura*, 706: 430-433.
- Escudero, A., Montalvo, J., García, B. and Gómez, J. (1983). Estudio comparativo de la movilización de bioelementos por los subsistemas arbóreo y herbáceo del ecosistema de dehesa. *Pastos de la SEEP XIII* (1-2): 9-20.
- Gutiérrez, C., Prieto, F. and García-Dory, M. (1984). Evolución del encinar en España. *Quercus mayo*: 9-14.
- Jambrina, J., Aranda, Y. and Fandos, P. (1993). Impacto de los herbívoros silvestres sobre la vegetación Mediterránea. *Quercus*, 91: 24-27.
- Meson, M. and Montoya, M. (1993). *Silvicultura Mediterránea*. Ed. Mundi-Prensa, Madrid.
- Pulido, F., Escribano, M. and Rodríguez, A. (1994). El ecosistema español de dehesa. Situación actual e incidencia de la reforma de la PAC. *AYMA*, 34 (4-5): 123-133.
- Rodríguez, R., López-Carrasco, C., Blázquez, M.A. and Zuzuarregui, J. (1996). Efecto de las fechas de programación de las parideras y del nivel de reservas corporales sobre la eficacia productiva en vacas Avileñas: Variaciones de peso vivo y condición corporal. In *Actas XXXVI Reunión Científica de la SEEP*, 4-7 June, Logroño (La Rioja), pp. 331-335.