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**DOMINGOS XAVIER VIEGAS
LUÍS MÁRIO RIBEIRO**

Managed grazing as wildfire risk reduction. A case study in Castilla - La Mancha, province of Cuenca (Spain)

Clara Quesada-Fernández*; José Félix Mateo-Fernández

Junta de Comunidades de Castilla-La Mancha. Cuenca, Spain, {claraquesada@gmail.com}

**Corresponding author*

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Abstract

Controlled grazing is a useful tool to manage and control fuel in the bush and reduce the risk of forest fires. In Castilla-La Mancha, an eminently agrarian region with a vast forest area, forest management of fuels has traditionally been carried out by crushing or burning waste in piles. Recently, this work is beginning to be carried out through prescribed burning. In recent years, experimental efforts have also been made to reintroduce controlled grazing to eliminate forest fuels through continuous browsing of forest vegetation in fire defense areas, previously carried out through preventive forestry work, avoiding or delaying the maintenance of these areas, assuming significant economic savings. Effectively reducing fuel, using local cattle ranches as a resource for fixing the population in the territory and recovering some autochthonous breeds of cattle contributes to the rural development of these regions of emptied Spain and helps to mitigate climate change. The present work analyzes the results of using cattle for the maintenance of the defense areas of Castilla-La Mancha with the results in the province of Cuenca, in approximately 1,100 annual hectares of management through managed grazing.

1. Introduction & antecedents

Extensive livestock farming can be considered a strategic sector, since as it is less dependent on external factors (fuel prices, fluctuation in feed prices, etc.) it can become essential as a method of exploitation dependent on its own resources.

The objective is to increase the periods in which a defense infrastructure against forest fires requires maintenance by means of mechanical tools. With this, the cost of maintaining the infrastructure is achieved in order to continue fulfilling the purpose for which it was designed. In this way, the creation and maintenance of a silvopastoral system was achieved, combining fire defense actions and the sustainable use of livestock, thus achieving the elimination and control of forest fuels and the maintenance of the defense areas of Castilla - La Mancha.

2. Objectives, methods

The feasibility of applying managed grazing in an area must be evaluated taking into account the area, the type of vegetation cover, accessibility, the presence of nearby cattle herds, as well as available infrastructure (sheepfolds, corrals, etc.) and possibility of having water. The economic justification is obtained by comparing the costs of treatment or maintenance through mechanical or manual clearing (which is the most common treatment) of a typical defense area in which, due to the plant formation and the quality of the site, it would have to be repeated the treatment in cycles of 5 years, with the maintenance costs of that same area through intensive controlled grazing.

The province of Cuenca has a long tradition of transhumance livestock related to ranches in the west of the community, Valle de Alcudia (Ciudad Real) and the north of Sierra Morena in the province of Córdoba and Sierra de Cazorla in Jaén. Extensive grazing has been carried out in a traditional way since ancient times (Figure 1) and participation in this program tries to give value and recognition to this activity.



Figure 1- Example of the effects of previous continuous grazing and observed in 2016 before the start of the program on mount 1097 in the municipality of Vega del Codorno (Cuenca).

The GENERAL OBJECTIVE is to maintain the defense infrastructures against forest fires or defense areas (AACC or AAEE) that make up the RAD in optimal conditions for the use for which they were made, reducing maintenance costs. To achieve this objective, it has been essential to have the coordinated work between shepherds and shepherds with their respective farms, the environmental agents Corps and forest engineers of the Ministry of Sustainable Development of the *Junta de Comunidades de Castilla - La Mancha* and *GEACAM*.

3. Results, conclusion

The line of work with controlled grazing was received differently depending on the provinces of Castilla-La Mancha, but in all of them actions were carried out on more or less surface. The provinces that best received this incentive were Cuenca and Guadalajara, executing 80% of the total area of the community in them. In this section we will focus on the results obtained in the province of Cuenca.

The year 2018 was the beginning of the journey with 7 contracts and 115 hectares grazed in the municipalities of Cuenca and Vega del Codorno. In 2019, the number of assigned hectares was increased and 873.57 hectares could be worked on, including the initial area of 2018 to add others in various municipal terms. In 2020, the last year of the program, the expansion was even greater and the 2018 and 2019 areas were joined by some more of them until reaching 1011.95 hectares.

The herds were homogeneous, for the most part, finding sheep, goats and cattle as the main species. Some farms were mixed, especially in the case of sheep with some goats. The breeds of each herd were varied.

The result of browsing was similar between flocks of sheep or mixed flocks of sheep and goats in equal plant formations. Better yields were obtained with herds of pure goats, mainly due to the increase in browsing on the shrubby species and the regrowth of *Quercus*. Cattle farms also showed good results in terms of vegetation control, since these animals uproot grasses and legumes, which means longer regeneration times, in addition to the effect of trampling in those areas where the presence of weeds is intensified cattle, also delaying the growth of vegetation.

One of the strengths of the program has been the involvement and perseverance of the work team, especially the shepherds, which has made it possible to obtain an optimal result on maintaining the infrastructures that have been worked on.

At the same time, the links between shepherds and the regional government were strengthened and it was shown that by carrying out this work it was possible to be more efficient in preventing forest fires.

The economic interest has made it possible to involve and motivate existing shepherds in the area who have actively participated by contributing with their experience and knowledge.



Figure 2. Example of the final result of cattle grazing in 2020 in Cañizares (Cuenca) (left) and in Monteagudo de las Salinas (Cuenca) (right). Photos: Clara Quesada, 2020. José Félix Mateo, 2020.

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